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[ORIGINAL COMMUNICATION.]

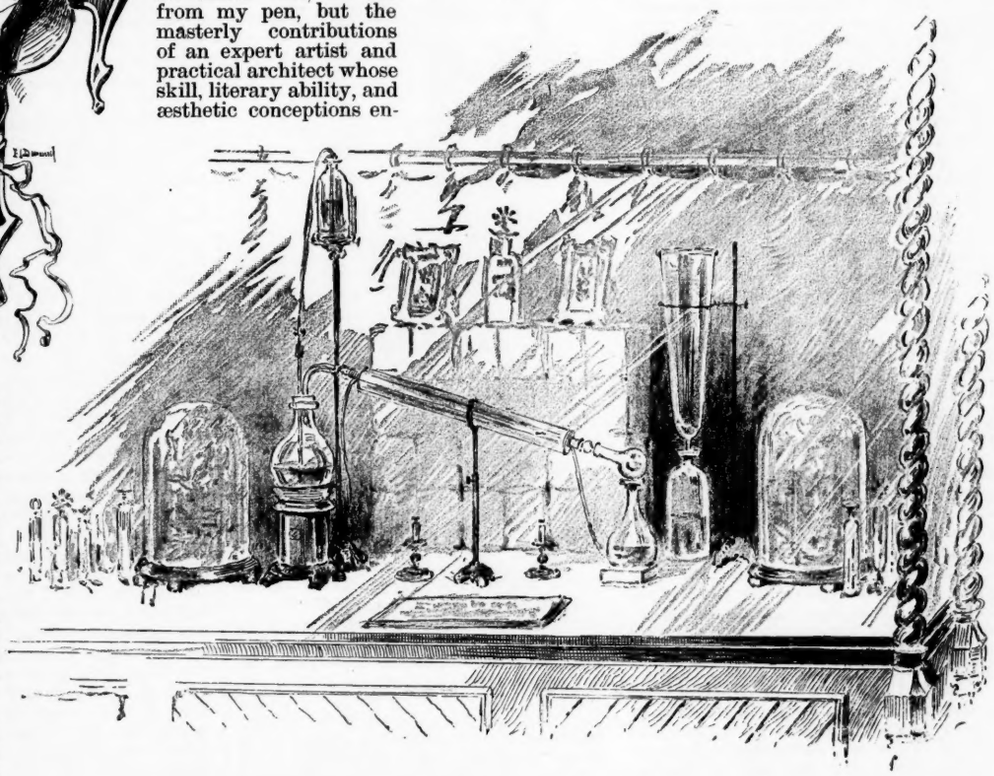
HOW TO MAKE DRUGGISTS' SHOW WINDOWS ATTRACTIVE.

BY S. J. BENDINER, OF NEW YORK,
AND PROF. J. P. REMINGTON, OF PHILADELPHIA.

THE lively interest taken in the series of articles, headed as above, published and handsomely illustrated in this paper, make it incumbent upon me to return to the same subject.

The circumstance will not have escaped the attentive reader, that the articles appearing in successive issues after the one fathered by me in November last, are not from my pen, but the masterly contributions of an expert artist and practical architect whose skill, literary ability, and æsthetic conceptions entitle him to occupy a foremost rank in his profession and whose statements merit the unqualified acknowledgement of being authoritative. On the other hand, the hints and suggestions which I have given and thrown out in my article upon this subject I consider, in comparison, of ephemeral value only; yet even they met, so far, with favorable comments by eminent writers, experts and manufacturers of artistic shop furniture. The accomplished editor of the *Canadian Pharmaceutical Journal* (December, 1884) devoted to my essay over an entire page and contributes many good remarks, thus adding to the literature of the subject. His comments I recommend to the careful perusal of all interested; the only fault he finds is with my inference "that in the majority of instances the apothecary's show window affords a tolerably reliable indication of the professional standing of the owner within." Of course, this is only my subjective view and has nothing to do with the real matter in discussion. If a professional man bestows little regard to his attire, or to his personal appearance, it is universally agreed that we call him, in the majority of instances, (in the current slang parlance of the day) "a slouch," and I contend with others, whose opinions I highly esteem, that a druggist's show window is his professional dress, and while I never imagined to accomplish over night, so to say, an entire revolution in the mode of exhibition of druggists' wares in their windows, I have at least endeavored to pilot my professional brethren into a proper and safe harbor. New houses will be built, old stores will be altered, and in either possibility the proprietor will find to his own advantage valuable hints and feasible plans suggested by the fertile professional writer of the articles published in this paper. And right here, however, I am afraid, we encounter a factor we have to guard against. We live in an imitative age; when we see a good thing we adopt it and multiply it *ad nauseam*, thus suffocating the germs from which new ideas spring. Already, I am informed, a manufacturer of artistic shop fixtures copies the objects illustrated in my article, Æsculapius, shafts with eagle, pedestal, and all. Now fancy numerous druggists' windows of one avenue embellished in this stereotyped manner? If it came to this, I would hide my face in shame, for the field is large and productive of manifold new thoughts to which my own suggestions were intended to start the nucleus, to build around and to stimulate a healthful growth.

I am happy to state that I find a powerful advocate in this direction in the person of my esteemed friend, Professor Joseph P. Remington, of Philadelphia, who devotes in his book, "Remington's Practice of Pharmacy," now in press, a very able chapter to "Arrangements of Objects in Pharmacists' Windows." While enjoying his hospitality four weeks ago, the genial professor read this chapter to me in his sanctum, and upon my request he obligingly permits me to publish it *in extenso*, but modestly desires that the author's name should be withheld. In not complying with this injunction, I hope I commit no indiscretion, first, because the article bearing the stamp of such high authority, the reader will at once be impressed with its import and bestow the most careful attention due to everything which the author says; second, it will be only a few months, when his article will be read by every professional man and student in the proper place in "Remington's Practice of Pharmacy."



I now proceed to quote this chapter upon

"ARRANGEMENT OF OBJECTS IN THE WINDOWS.

"One of the most difficult subjects for a professional pharmacist to attack is the proper arrangement of the windows. In our larger cities, in the general stores, "window dressing," as it is termed, is in the hands of educated men who earn a comfortable livelihood at the "profession." It is far easier to note the objects which should *not* be exposed than to indicate those which *are* suitable.

"*Legitimate and proper objects are always found in the products of the pharmacist's own skill and labor.* Many rare and beautiful chemical salts can be crystallized in thin glass dishes; these, if the salt is colorless or white, can be shown to advantage, on a back ground of black velvet; if the salt is dark colored, like chrome alum, a white background should be chosen. Masses of crystals of various colors, like alum, sulphate of copper, ferrocyanide of potassium, etc., etc., form attractive objects, if they happen to be novelties in the neighborhood; these may be obtained from the manufacturing chemists.

"Chemical or pharmaceutical apparatus, tastefully displayed, rarely fails to excite the admiration of some passers-by, whilst if some simple pharmaceutical process is shown in actual operation, like the distillation of water or

colored liquids in glass retorts, with a glass Liebig condenser, two objects will be gained—a supply of the distillate will be secured and the reason for possessing the window is legitimately realized. Growing plants of the Materia Medica can often be secured by applying to conservatories, or with a little patience and care some of these may be easily grown at home. If these plants be rare or of foreign origin, the interest is greatly enhanced. This point, however, should always *be kept in view*—the object should always have a bearing or connection with pharmacy. Appropriate labels should always accompany the objects exhibited, or the annoyance of having to answer trivial questions many times in the day will be experienced.

"An instructive *series* of window exhibitions may be devised as follows, the series to extend through many months. To illustrate: An empty ceroon which has held cinchona bark should be obtained and a reproduction, through some friend clever with the pencil, of some of the prints to be found in the books, of natives gathering cinchona bark, and also enlarged photographs or drawings of the cinchona tree; some large, handsome pieces of the bark should be selected, showing the different grades and qualities; then there should be exhibited, in appropriate bottles, a series of all of the *home-made* pharmaceutical preparations of cinchona bark, and, for the centre-piece, choice specimens of all of the cinchona alkaloids; then the pharmaceutical preparation of the alkaloids in the background, etc. A clearly written statement should be shown in the window, giving popular and useful details of each object. When the interest in this subject has waned, the same method may be applied to nux vomica, coca, rhubarb, opium, eucalyptus, senna, etc., etc., and other similar subjects.

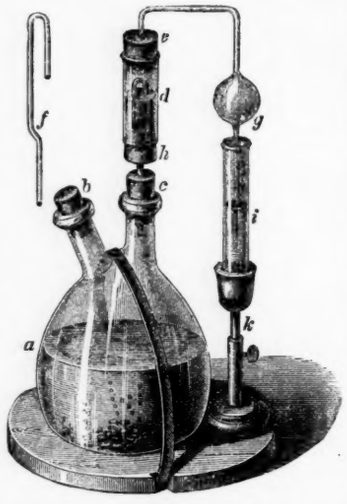
"It will be readily seen that the purpose of exhibitions of this character are to impress the community with the fact that the proprietor of the store is not only a merchant and dealer in the products of others' skill, but that he is a manufacturer himself."

Such excellent suggestions and recommendations will surely fall upon rich soil and ripen into wholesome fruit, for the author has adapted them not only for use by the pharmacists of the larger cities, but for that of the 30,000 druggists in the United States.

Concluding, I wish to call the kind reader's attention to one more subject which properly ought to have been mentioned in my first article. I allude to the pernicious practice of placing obstructing signs outside of the stores, such as bulletins announcing a list of soda waters, cigars for sale, etc., or a scaffolding whereupon hangs a specimen of cemented china to which a presumably heavy weight is attached; or to the permanent exhibition of a row of unsightly and dirty, empty, acid carboys, which ought to be put out of sight, if for no other reason, than out of deference to one's neighbors, whose good-will we court.

NEW YORK, January 22d, 1885.

[The illustration on the preceding page, made by our artist from a sketch furnished by Professor Remington, is intended to represent the manufacture of cocaine hydrochloride in the window. The percolator at work shows the mode of preparing the alcoholic fluid extract or acidulated tincture. The distillation represents the recovery of the alcohol; the reservoir bottle and siphon enabling the flask to be constantly fed with the percolate, while a siphon, not shown in the illustration, may be connected with the flask, and the distillate siphoned off as fast as it collects. The large object in the background is intended to represent the package in which the coca leaves reach the market, but it has been somewhat idealized by the artist to the extent of resembling more nearly a cotton-bale. In one of the glass globes the bright-green leaves are shown, and in the other the darker, brownish-green or inferior leaves. Standing on the bale are two drawings or illustrations of the growing plant (taken from Baillon or other authorities), and between them stands a precipitating bottle. The small bottles on the stands are intended to exhibit the wonderful alkaloid and its solution, while the larger bottles, on either side, contain the fluid extract, tincture, wine, infusion, elixir, etc., of coca. A carefully-written explanation of the objects exhibited occupies the foreground.—ED. AMER. DRUGGIST.]



HAGER'S SULPHURETTED HYDROGEN APPARATUS.

ONE of the forms of apparatus for generating hydrosulphuric acid gas, which recommends itself by efficiency and convenience, is one devised by Hager and described by him in his *Commentar zur Pharm. Germ. II*, vol. II., 786.

A two-necked flask with flat-bottom, [or a Woulff's bottle] and of about the capacity of 150 C.c. (5 fl. oz.) is charged with about 60 C.c. (2 fl. oz.) of diluted sulphuric or hydrochloric acid. The second neck, *b*, serves for the introduction of the sulphide and is closed with a rubber cork. Into the other neck is fitted a gas-washing vessel, consisting of a wide glass cylinder, closed at each end with a singly perforated rubber-stopper, and connected with the flask by means of the glass-tube *f*, passing through the stoppers *h* and *c*, the upper curved portion of the tube *f* being inside the glass-cylinder. The latter is filled up to *d* with water. A curved gas-delivery tube is provided with a bulb *g*, to receive and hold any larger quantity of liquid that might be sucked back when the delivery of gas ceases. K is a stand or holder for the test-tube containing the liquid through which the gas is to be passed. When not in use, the whole apparatus is covered with a bell-glass, which Hager directs "to be lined, inside, with colored paper."

Hager directs to use sulphide of zinc, in small pieces, ½ to 2 Gm. at a time, which will be enough for one testing. And if a rapid generation of gas is desired, this may be hastened by gently warming the flask, removed from the support.

A RUSSIAN has patented a new match. By preparing wood, and impregnating it with a secret composition, it will ignite with slight friction, and can be used repeatedly.

[ORIGINAL COMMUNICATION.]

THE MANUFACTURE OF MERCURIAL PREPARATIONS ON A LARGE SCALE. *

BY AD. SOMMER, OF BERKELEY, CAL.

THE longest and most fatiguing of all pharmaceutical operations is the extinction of mercury in preparing blue ointment, blue mass, and mercury with chalk. Many of you have undoubtedly sought for and discovered methods, which, differing slightly from the orthodox pharmacopœial regulations, serve the purpose of economizing time. I, like the rest of you, have rubbed, and kneaded, and worked over these preparations, till the sweat would flow from my brow and strong language from my mouth, and numerous are the experiments I made in order to lessen the labor. I do not intend to tire you by a description of the various methods I tried, but I will merely mention one, which was confided to me while yet an apprentice in my fatherland, by one of those over-worked and illy-paid members of our profession, who in my native land bear the euphonious title of "Herr Provisor," and are called here briefly, "clerk." Upon my promise never to reveal his name, for the petrified Apothecary-laws of Germany do not sanction any deviation from the rules laid down by the Imperial Pharmaceutical Commission, he showed me how, by shaking mercury with certain liquids, such as oil of turpentine or the resinous tinctures (Tr. Tolu, Tr. Benzoin), it could be brought to a state of fine division, in which condition it is easily mixed with semi-fluid fat. After this revelation mercurial ointment had no longer any terror for me, and whilst I was engaged in the retail business, I prepared, in this way, all of the mercurial ointment that I sold. However, while this method may answer the requirements of the retail pharmacist, who is the supreme judge of the quality of his preparations, on account of the addition of foreign substances (the oil of turpentine or the tincture) to the ointment, the method is unsuitable to the manufacturer who makes large quantities of mercurial ointment for the trade. When, therefore, being requested to make this ointment by the hundredweight, I was obliged to look for a different method. I searched all the pharmaceutical literature which was at my disposal for practical, working formulas, but did not succeed in finding any which satisfied me. I then made a number of experiments and was thereby led to adopt the following method and apparatus:

Mercurial Ointment.

Upon a solid board, which accurately fits into the frame of a sifting machine having a horizontal motion, are fastened, by means of wires and wooden cross pieces, two ordinary, iron mercury flasks. Into each flask are poured 25 lbs. of mercury and 2½ lbs. of any liquid fixed oil, preferably Union Salad Oil. The plugs are then tightly screwed into the openings of the flasks and the whole apparatus is laid into the aforesaid frame. The frame, which is attached to an eccentric crank, is then set in motion by connecting the latter by means of a belt and pulleys with the shafting of a steam motor, and allowed to be shaken for about eight hours. At the end of this time the mercury is in so fine a state of division that a magnifying glass with a power of 10 diameters will show no globules of mercury. In the mean time 46 lbs. of beef suet are melted, and, after liquefaction, allowed to cool to about 50 degrees centigrade. The contents of the two flasks are then emptied into a

* Read before the Alumni Assc. of the California Coll. of Pharm.

capacious pan and about one-fifth of the liquid fat added. This mixture is then vigorously stirred, till it has become semi-solid, when another portion of the liquid fat, which of course, by very little warmth, must be kept as near as possible to 50° C., is added to it. These additions and subsequent incorporations of liquid fat are continued until all of it has been added, observing only this special precaution: never to make any new additions before the previous one with the mercurial mixture has cooled down to a semi-solid state. The resulting mixture is generally tolerably uniform, but sometimes it happens that a small portion of fat hardens on the sides of the pan, before it can be incorporated into the mercurial mixture, thereby forming small lumps, which, on account of their yellow color, give to the finished preparation a mottled appearance. In order to overcome this objection and to insure complete homogeneity, it was found advisable to pass the ointment, while still warm, through an ordinary iron paint-mill, under the lower muller of which is placed a trough made of tinned sheet iron. This trough is provided with a spout on one side, and a steel spring on the left hand side of the spout, which spring serves the purpose of scraping the lower muller, when, during the operation of grinding, the muller turns in the direction from right to left.

After the hopper has been filled with the semi-solid ointment, the mill is set

Paint mill for mixing ointment.

in motion, whereupon the ointment flows down the spout in the form of a glossy, dark-gray band and may be allowed to run at once into the receptacle that is destined to hold it. Should the temperature of the workroom be so low that the ointment congeals within the hopper, the latter should be warmed occasionally by means of a small gas- or alcohol lamp.

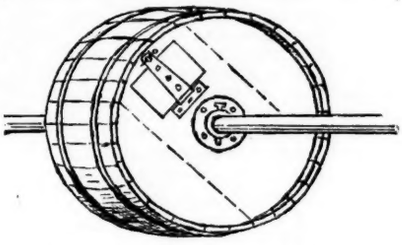
When it is desirable to produce an ointment that is less crumbly than the one obtained by the previous formula and that will possess a tenacity for which an article sent out by a Philadelphia manufacturer is highly valued by some dealers, the object can be attained by adding to the fat from 6 to 10 per cent of rosin. The formula altered accordingly, for 100 lbs. of mercurial ointment, will be:

Mercury	50 lbs.
Union Salad Oil	4 "
Rosin	4 "
Fresh beef tallow	42½ "

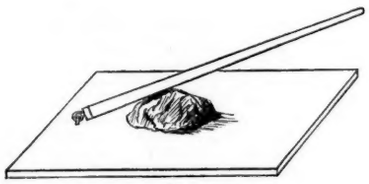
Shake the mercury with the oil until the former is finely divided, and add to this compound the mixture of rosin and fat previously melted and cooled to about 50° C. Finally pass the whole while still warm through a paint mill.

Blue Mass.

The extinction of mercury in Massa Hydrargyri is, perhaps, even more difficult than in Ung. Hydrarg., if you follow the directions of the U. S. Pharmacopœia; but by adopting a plan similar to the one just presented, the labor of preparing this article is reduced to a minimum. As in the preparation of mercurial ointment, so in that of blue mass, a liquid is required to divide the mercury. But the problem of finding one, which would be unobjectionable for internal use and at the same time envelop the particles of mercury, as did the oil in the former preparation, and prevent their coalescence, necessitated many experiments. Remembering that ammoniacal glycyrrhizin, when dissolved in water and strongly shaken, gives a soap-like froth, I assumed that it might also possess the enveloping properties of soap, and therefore dissolved a little of it in a mixture of alcohol and glycerin and added to it a considerable quantity of mercury. After shaking the mixture for some time, the result was, as I anticipated: the mercury was finely divided and did not coalesce upon standing. Substituting then powdered licorice root for the ammoniacal glycyrrhizin and a mixture of glycerin, alcohol and water for the liquid previously used, I obtained the same result. Furthermore I found that a liquid composed of glycerin and water alone cannot be employed in this case on account of a thick froth, which forms on shaking, soon fills the vessel



Barrel for grinding mercury with chalk.



Lever for mixing blue-mass.

and, acting like a cushion, retards the motion of the liquids. From these experiments I deduced the following formula and method for preparing the compound in question, the quantities given being sufficient for one flask:

Mercury	25 lbs.
Glycerin	2 lbs. 5½ oz.
Water, each	9½ fl. oz.
Alcohol, each	9½ fl. oz.
Powdered Licorice root	3 oz.

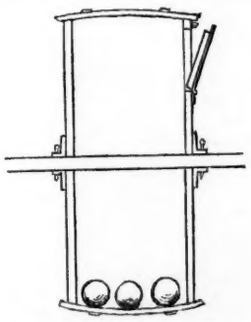
These ingredients are all placed in an iron mercury flask, which is shaken precisely in the same manner, and by the same machine described above under mercurial ointment. After eight hours of shaking the mercury is found to be finely divided. The contents of the flask are then poured into a large dish and the honey added with energetic agitation. When this mixture has become perfectly homogeneous the proper proportions of powdered rose leaves, marshmallow, and licorice root (all previously sifted), that are requisite for 75 lbs. of blue mass, are incorporated. Finally, that the mass may be made perfectly homogeneous, it is divided into lumps weighing about 3 lbs., which are kneaded on a table by means of a lever consisting of a long wooden pole, which at one end is fastened by a swivel-joint to one side of the table, while the free end is manipulated by the operator. In place of the expensive rose leaves, which in this preparation serve apparently no therapeutic purpose, a mixture of powdered marshmallow, and licorice root, perfumed with the oil of rose, may be substituted with profit and is, perhaps, excusable.

Mercury with Chalk.

If it were possible that any pharmaceutical preparation could be even more tedious and aggravating than mercurial ointment and blue mass, it would certainly be Hydrargyrum cum Creta.

It matters not by what pharmacopœia you operate, you will, unless endowed with more than average human endurance, relinquish the work in disgust. The formula of the U. S. Pharmacopœia of 1880, which has been embellished with several extravagant modern improvements, has proven in my hands even worse than its predecessors. Where an inanimate machine is made to perform the labor of triturating, the official formula may be practicable. But the expense involved in constructing a complicated triturating machine, has induced several manufacturers to adopt more inexpensive methods.

Succussion, which serves so well to extinguish the mercury in the two foregoing preparations, is said to be equally serviceable in this case, but for various reasons, I have given the preference to a method lately devised by Mr. John Calvert, of San Francisco, whereby the extinction of the mercury as well as a complete mixture is effected by putting all the ingredients with some iron balls into a barrel and rotating the latter.



Section of barrel.

The apparatus I have constructed, and found very suitable for this purpose, consists in a rather flat barrel built of strong oak-wood, whose diameter is 20 inches and whose height (the distance from top to bottom) is 10 inches. The interior walls are planed perfectly smooth. Through the center of head and bottom is bored a one and a-half inch hole, over which (on the outside of the barrel) are fastened, concentrically, two strong, cast iron flanges, also having a one and a-half inch hole through their centres. By this arrangement the barrel can be readily placed on a one and a-half inch shaft, which is connected by pulley, belt, etc., with a steam motor. Two set-screws in each of the flanges serve to fasten the barrel to the shaft. In order to give access to the interior a piece of about four inches square is cut out of the top and fastened to the longer half of a T hinge, the shorter half of which is fastened to the solid portion of the head, while the other half, which overlaps the door by about two inches, passes over a staple, also driven into the solid portion of the head. By merely passing a tightly fitting plug of wood through the staple, after the door has been closed, the latter is effectually locked in the simplest manner.

When it is desired to make the mixture of mercury and chalk, a quantity of the ingredients necessary to make 25 lbs. of the finished product is placed in the barrel. At the same time three iron balls, each weighing about 5 lbs., are also put into the barrel, the door closed and locked,

the barrel placed on a shaft, and the latter caused to rotate slowly by connecting it with the steam-motor. After the barrel has revolved around its axis for about ten hours, it is taken off the shaft, the door opened and the contents removed. The mercury will then be found to be entirely extinguished and completely mixed with the other ingredients.

When this preparation is made according to the process just outlined, there appears to be no necessity for the employment of milk-sugar in conjunction with chalk. The addition of sugar of milk was professedly only made by the U. S. Pharmacopœia in order to facilitate the extinction of the mercury, which purpose it does fulfil to a slight extent by the grinding action it exerts on account of the roughness of its particles upon the mercury. But when the extinction of the mercury can be so readily and completely effected without the sugar of milk by a machine, the manufacturer is apparently perfectly justified in returning to the original formula, sanctioned by all foreign pharmacopœias as well as by all those of the United States that precede the 1880 edition, and make this preparation, as its name indicates, from mercury and chalk only.

Improved Process for making Salicylic Acid.

WE stated in our last volume that an improved process has been discovered for making salicylic acid on a large scale. Under Kolbe's former process, only one-half of the carbolic acid or phenol employed was converted into salicylic acid. Under the new process, the whole of it is so converted, and consequently makes a considerable saving in the cost of the manufacture. The owner or chief licensee of Kolbe's patent, Dr. F. v. Heyden, in Dresden, has acquired this patent from the discoverer of the process, Dr. Rud. Schmitt, for 100,000 marks. Whether the price of salicylic acid will be much lowered, or at all, is somewhat doubtful, as its preparation from phenol is still a monopoly.

The new process may be briefly described as follows:

The dry phenolates (or carbolates) of alkalies and alkaline earths, prepared by acting with carbolic acid upon these substances in a caustic state, are exposed, at ordinary temperature, to a current of carbonic acid gas, until the latter is no longer absorbed. This causes the formation of a double carbonate of phenyl (C_6H_5) and of the alkali metal, for instance, with sodium:

Phenyl-sodium carbonate:

$$C_6H_5ONa + CO_2 = C_6H_5O\atop NaO\Big\}CO$$

phenol-sodium. — carbonic acid gas. — phenyl-sodium carbonate.

On heating the latter salt for a few hours, in a closed vessel, to 120–140° C., a molecular re-arrangement takes place in the salt, without the separation of any phenol, thus:

$$C_6H_5O\atop NaO\Big\}CO = CH_4\begin{matrix}COONa\\OH\end{matrix}$$

phenyl-sodium carbonate. — sodium salicylate.

Upon opening the vessel no pressure is noticed, and the absolutely dry, powdery salicylate need only be dissolved in water, the salicylic acid separated by the addition of a mineral acid, and purified by recrystallisation, sublimation, or dialyzation in the usual manner.

There are several other methods named in the original patent, which are, however, only modifications of working details of the above process, and are entirely based upon it.

Improvement in the Preparation of Chloral.

ACCORDING to Page, a larger yield is obtained when the alcohol used for the preparation of chloral is treated with 5 per cent ferric chloride or thallium chloride previous to the introduction of chlorine. The resulting liquid, consisting of a mixture of chloral, hydrate of chloral, and chlorinated ethanes, which can be separated by fractional distillation, is subjected to distillation, ferric chloride or thallium chloride remaining in the residue. The chlorinated ethanes, which come over at a temperature above 100°, are purified by fractional distillation, the mixture of chloral and hydrate of chloral is distilled over calcium carbonate, treated with the requisite quantity of water, and the resulting hydrate of chloral re-crystallized from the chlorinated ethanes previously obtained.—*Dingl. Polyt. J.* and *J. Chem. Soc.*

Glycerin: The Relation of Percentage of Water to Specific Gravity.

G. TH. GERLACH has lately published the result of recent investigations on the subject of the percentage of water in glycerin at different specific gravities, and on the vapor-tension of glycerin solutions at 100° C. As that portion of the table which gives the relation of percentage of water to specific gravity is of importance and practical interest to many of our readers, we reproduce it here:

Parts of Glycerin in 100 Parts of Liquid.	Parts of Glycerin to 100 Parts of Water.	Specific Gravities.		Boiling Point (C°) at 760 *mm* Pressure.
		At 15° C. (Water at 15° C. = 1)	At 20° C (Water at 20°C. = 1)	
100	Glycerin	1.2653	1.2620	290
99	9900	1.2628	1.2594	239
98	4900	1.2602	1.2568	208
97	3233.33	1.2577	1.2542	188
96	2400	1.2552	1.2516	175
95	1900	1.2526	1.2490	164
94	1566.66	1.2501	1.2464	156
93	1328.571	1.2476	1.2438	150
92	1150	1.2451	1.2412	145
91	1011.11	1.2425	1.2386	141
90	900	1.2400	1.2360	136
89	809.090	1.2373	1.2333	135
88	733.333	1.2346	1.2306	133.5
87	669.231	1.2319	1.2279	130.5
86	614.286	1.2292	1.2252	129
85	566.666	1.2265	1.2225	127.5
84	525	1.2238	1.2198	126
83	488.235	1.2211	1.2171	124.5
82	455.555	1.2184	1.2144	123
81	426.316	1.2157	1.2117	122
80	400	1.2130	1.2090	121
79	376.190	1.2102	1.2063	120
78	354.50	1.2074	1.2036	119
77	334.782	1.2046	1.2009	118.2
76	316.666	1.2018	1.1982	117.4
75	300	1.1990	1.1955	116.7
74	284.615	1.1962	1.1928	116
73	270.370	1.1934	1.1901	115.4
72	257.143	1.1906	1.1874	114.8
71	244.828	1.1878	1,1847	114.2
70	233.333	1.1850	1.1820	113.6
65	185.714	1.1710	1.1685	111.3
60	150	1.1570	1.1550	109
55	122.222	1.1430	1.1415	107.5
50	100	1.1290	1.1280	106
45	81.818	1.1155	1.1145	105
40	66.666	1.1020	1.1010	104
35	53.846	1.0885	1.0875	103.4
30	42 857	1.0750	1.0740	102.8
25	33.333	1.0620	1.0610	102.3
20	25	1.0490	1.0480	101.8
10	11.111	1.0245	1.0235	100.9
0	0	1.000	1.000	100

Keratine-Coated Pills.

AT the Medical Congress, held in Berlin, Dr. Unna described a pill-coating material which had been devised by him with the object of protecting pills from the action of the gastric juice, and yet allow them to dissolve in the alkaline contents of the small intestine. The preparation, being obtained from horn, has been named "Keratine." It is insoluble in hydrochloric acid, but easily soluble in alkalies. It is made by digesting horn shavings first in artificial gastric juice, until all the albuminous substances capable of being dissolved out by pepsin and hydrochloric acid are removed, and then for several weeks in ammonia. The "Keratine" is dissolved by the ammonia, and upon evaporation of the solution until only a trace of ammonia remains, a gum-like liquid is obtained, which can be used for coating pills. As Dr. Unna has found that pills made with ordinary excipients are apt to swell and burst the keratine coating, he recommends the use of an excipient consisting of charcoal, almond oil and cacao butter. Each pill should be covered with a layer of cacao butter and then coated two or three times with keratine. Although not soluble in hydrochloric acid, keratine is soluble to some extent in acetic and citric acids; these acids, therefore, should not be given at the same time as keratine-coated pills. Notwithstanding the claim put forward in behalf of this substance, the *Medical Chronicle* (Nov., p. 182) states that some keratinized pills of salicylate of soda, prepared by a Hamburg pharmacist, recommended by Dr. Unna, when recently tested in the laboratory at Owen's College, did not remain unchanged upon being exposed to the influence of gastric juice at a temperature of 39 C., the keratine coating breaking down in ten minutes and traces of salicylic acid being then recognizable in the liquid. On the other hand, it is admitted that at the Congress Dr. Unna exhibited pills that were unaffected by artificial digestion. —*Pharm. Journal.*

The Purity of Honey.

ALL text-books contain the statement that honey contains varying quantities of lævulose and of glucose, and that the latter become preponderant with age.

F. Elsner has ascertained that this statement is erroneous, and that the presence of glucose in honey can be recognized with the greatest ease and certainty.

On the basis of a large number of experiments made with different specimens of honey of undoubted purity, it was found that (as already stated by Schmidt in his *Ausf. Lehrb. der Pharm. Chem.*) aqueous solutions of honey turned the plane of polarization to the *left*. This examination is best conducted so that a 10 per cent aqueous solution is prepared from each honey, decolorized by means of animal charcoal, and then examined in a "Wasserlein" polarizing apparatus, which directly indicates the percentage of glucose. Genuine honey of every age and source, tested in this manner, showed that it only contained invert-sugar, and always so much of the left-rotatory lævulose as to overcome the feeble right-rotatory power of the natural glucose present. In other words, *pure, genuine honey* is either neutral to polarized light, or more commonly turns the latter slightly to the left, *never* to the right.

Some dealers in honey are in the habit of adding glucose to natural honey, because the public seems to demand that the latter should remain liquid—without crystallizing—which is wrongly considered a sign of its purity. Such honey, when examined with polarized light, will be found to be more or less dextro-rotatory. The same effect is produced by the addition of grape-sugar, and also by inducing bees to feed upon glucose, which is, however, a ruinous process, since it causes sickness and speedy death among the latter.—After *Schweiz. Wochenschr. f. d. Pharm.*

NOTES ON PRACTICAL PHARMACY.*

(Continued from page 29.)

INFUSIONS AND DECOCTIONS.

WHEN water (wine, vinegar, etc.) is poured over drugs (species) in order that it abstract therefrom and take up the active constituents, it is called an infusion, *infusum;* but if the drug is boiled in the fluid for the same purpose, we obtain a decoction, *decoctum.* The infusion is usually made from such substances as contain volatile constituents which would be lost by boiling. The decoction, on the other hand, is primarily for the purpose of extracting mucilaginous, resinous, extractive, and other non-volatile substances.

Formerly, for the preparation of an infusion, the boiling hot water was allowed to act upon the substance to be exhausted, for half an hour or until cold, in a covered vessel; and for the preparation of a decoction, double the quantity of water was boiled down one-half with the species in a flat pan of tinned iron.

[Infusions and decoctions which are very frequently ordered in German practice, and to the preparation of which much time and care is devoted, are comparatively rarely used in the U. S., as the fluid extracts enable the physician to dispense with the former. For the manner of preparing our officinal infusions and decoctions, we refer to the U. S. Ph.].

The latter procedure has been altered in the last thirty years, since the so-called steam apparatus have been introduced; the decoction being changed into an infusion in which the digestion is extended over a longer time, at the heat of the water-bath at the boiling point. The German pharmacopœia has given to the mode of preparation of an infusion and decoction the following definite form:

"For the preparation of an infusion, boiling hot water is poured over the species in a suitable vessel and allowed to remain for five minutes in the closed vessel on a water-bath, then removed from the latter, allowed to cool, and strained under pressure when *cold.*"

"For the preparation of a decoction, cold water is poured over the species in a suitable vessel and heated for half an hour on the water-bath. During this time the mass is occasionally stirred, and then the still *warm* fluid is strained under pressure."

This mode of preparation is quite serviceable, and in the great majority of cases it suffices for the exhaustion of the vegetable drug, if the latter had been cut small enough or been bruised. In making an infusion, it must not be overlooked that the species are to be covered with boiling hot water, but that the pouring on of cold water and heating to the temperature of the boiling point is not admissible.

As soon as the species have been covered with water for the purpose of preparing a decoction or infusion, they are at once stirred with a porcelain or glass rod so that the species be completely below the level of the water.

We also distinguish the following varieties of infusions and decoctions:

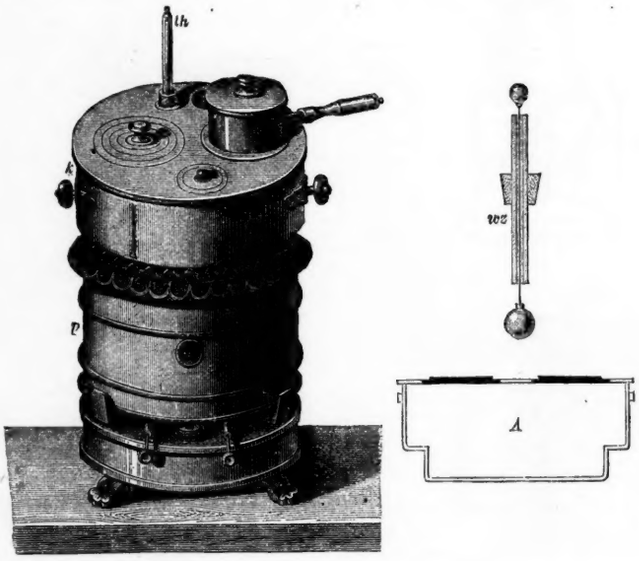
Cold infusion, *infusum frigide paratum;* maceration, *maceratum.* This is prepared by covering the species with cold water (wine, vinegar) and allowing it to macerate under frequent stirring for one day at the ordinary temperature, provided the physician has not limited the period of maceration. The ordinary infusion, in the more restricted sense, as opposed to the cold infusion, is hot prepared or an infusion by digestion.

Decocto-infusum, a combination of decoction and infusion, consists in that to the hot decoction, previous to being strained, some species is added. After five minutes' digestion in the steam-bath, it is set aside to cool, and the cold fluid strained.

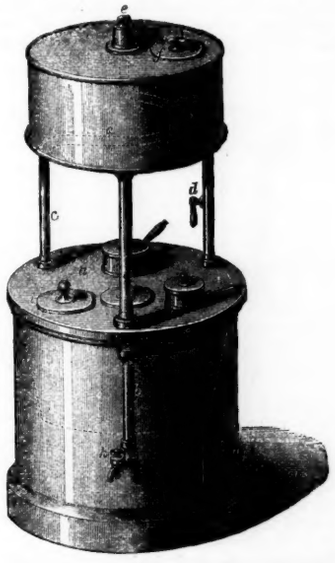
Infuso-decoctum, a combination of infusion and decoction, is one in which the species is first covered with half the amount of the hot water required, then placed for five minutes in the steam-bath, allowed to cool, and strained; then the species is covered with the other half of cold water, heated for half an hour in the steam-bath, and strained while still hot. The two preparations are mixed. This procedure is nearly obsolete.

By boiling hot water is meant water heated in the steam-bath, the temperature of which is between 95 and 100 degrees. In ordinary life, boiling hot water is understood to mean water at the temperature of 100° C. (212° F.)

Since the introduction of petroleum as a cheap illuminating material, efforts have been made to produce apparatus which would make it available for heating purposes. Of the kerosene stoves at present in the market, although they do not meet all the demands made of a practical cooking apparatus, those with two burners commend themselves as handy and cheap heating apparatus for small decoctoriums, which can be put up in the prescription department or in a suitable adjoining room or in a chimney. Their use, however, requires in the first place the choice of a pure, good quality of oil, and secondly, some care in their attendance, especially the regulation of the flames. For this purpose the presence of a thermometer in the decoctorium is of great assistance. If there be no operation for the decoctorium on hand, the flames should be turned so small that the temperature of the water remains at 80 or 90° C. For use the flames are made larger without causing them to smoke, and in ten minutes the water in the decoctorium is raised to 100° C. For the preparation of an infusion, a decoction kettle is filled with water and kept permanently in the apparatus. For instance, the decoctorium figured in the adjoining illustration has been in almost daily use for many years without having required any repairs or become otherwise inconvenient.



Kerosene stove with decoction apparatus. *A*, section of the decoctorium; *wz*, water gauge.



Large, showy decoction apparatus for dispensing establishments.

The apparatus is made of strong sheet copper. The upper, wider portion measures 22 *Cm.* in diamter. The cover is provided with two openings which can be reduced by brass rings and serve for the reception of the infusion or decoction kettle. The cover contains besides three smaller openings lined with tubes in which can be inserted, according to requirements, a thermometer, a water gauge, and a return-flow tube. In my opinion, a thermometer is indispensable if a decoction or infusion is to be prepared according to the directions of the German Pharmacopœia, for the steam-bath must have a temperature of 100° C.

The thermometer is inserted by means of a perforated cork, and is protected by a brass tube, provided with a slit through which the scale is visible. The return-flow cooler is either a simple, strong glass tube, about 25 *Cm.* long, or else a brass vessel containing a lead or tin worm which opens into the external air at the top of the vessel. This is likewise inserted into the decoctorium by means of a cork. The water gauge consists of a brass tube inclosing a round brass rod, which is provided with a small hollow brass sphere at the upper and a larger one at the lower end. This is likewise inserted by means of a perforated cork, but in

* The basis of this series of papers is the latest edition of Hager's "Technik der Pharmaceutischen Receptur." The editors have, however, found it desirable to omit certain portions which relate to matters of practice peculiar to Germany, and to insert others which are more characteristic of American customs. Editorial additions are inclosed in [ ].
The use of the original text has been kindly granted by Dr. Hager.

such a manner that the small ball closes the tube when the water level has sunk to the height of 5 *Cm.*

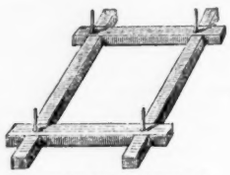
The various appliances which are in use agree in their arrangements with those described. The more elaborate ones consist generally of a copper pot with straight walls, or of a rounded kettle having a tin or brass cover which is either soldered on or fastened with screws; usually they have no float and but rarely a water gauge. In larger establishments we find in the dispensing department a decoctorium which serves at the same time as a heating apparatus, and which is of the most conspicuous elegance. Its external covering is made entirely of sheet brass, which of course must be frequently polished in order to appear always bright. The apparatus consists of the fire-place (*h*), with the water-bath (*a b*), and a supply reservoir (*e d c*). The parts are connected by three or four brass columns, two of which are tubular. If the fire-place is intended for wood or coal, it is lined with chamotte (fire-brick) and a chimney is supplied. But if ordinary illuminating gas is used for fuel, the fire-place is lined merely with strong tinned sheet iron, and the gas tube terminates below the middle of the water-bath. A chimney is superfluous in the latter form. The water-bath is of copper, strongly tinned on the inside. On the side of the lower part of the apparatus is a water gauge (*b*), the lower frame-work of which ends in a faucet (*h*). The latter is used for drawing hot water for decoctions and infusions, as well as for emptying the water-bath.

Hand decoction vessel with kerosene stove for night work.

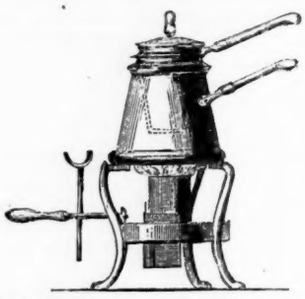
In very small establishments where the preparation of infusions and decoctions is but rarely called for, as well as for night work, the hand apparatus is employed. It consists of a brass water-bath (*b c*) provided with a handle. Above, it terminates in a brass ring (*b*) for the reception of the infusion kettle (*a*). The opening of the water-bath can be reduced by one or two heavy rings, so as to answer also for smaller vessels. The water-bath is filled two-thirds full of water and heated by means of a spirit lamp or a gas flame. As soon as steam escapes between the ring and the infusion kettle, the flame is made smaller, so that it serves merely for warming. Other forms of infusion or decoction vessels are shown in the adjoining figures.

STRAINING, COLANDERS, STRAINERS.

In order to remove the exhausted species, the infusion or decoction is strained; passed through a straining cloth. The simplest, cheapest, and most cleanly straining cloths are those of unbleached linen of square form. For the purpose of straining, the cloth is laid over a pot-shaped porcelain or tin vessel with spout, or straining pan, in such a way that its middle depends somewhat bag-like into the vessel. Into this bag-shaped depression the fluid with the species is carefully poured. After the liquid portion has run off into the vessel, two opposite corners of the cloth are placed together, rolled lengthwise into each other, then with both hands the ends of the now cylindrical cloth are grasped and twisted with some force in opposite directions, in order thus to express as much fluid as possible from the species. If the quantity of the species is too large to permit of thorough expression in one operation, it must either be expressed in several portions or a press must be used. The straining cloth may also be stretched on a frame, the fluid allowed to drain off, and the species then placed in the press.



Frame for holding strainer.



Hand decoction apparatus resting on a spirit lamp.

Hand decoction vessel.

In this connection it may be remarked that an infusion of althæa root must never be strained with strong hand or machine pressure, otherwise a turbid, unsightly liquid would result, because small particles of the slippery root are thus forced through the meshes of the straining cloth.

Straining should be done with a certain dexterity, lest any of the fluid be spilled or some of the species be dropped. In order to compress the solids in the cloth and withdraw them easily and completely from the infusion kettle, an extract spatula or a silver spoon is employed.

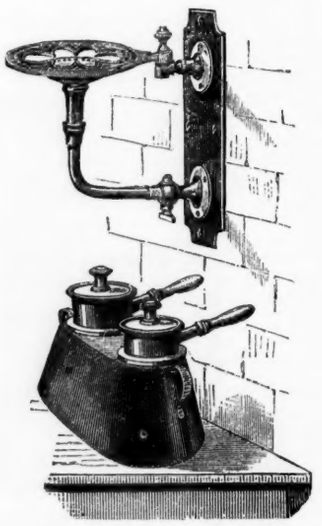
Straining must never be done in the sight of the customer. No matter how neatly and tidily performed, this operation is not one that would stimulate the appetite of the patient for the medicine.

Strainers. — Good unbleached, not too dense linen, is, as above stated, the best and cheapest material for strainers, for ordinary dispensing purposes. When they have become deeply stained or unsightly by frequent use, they are thrown aside. In order to fit the linen for strainers, it is cut into square pieces of three or four different sizes, adapted respectively for ten, twenty, thirty, and fifty grammes of species. The pieces are hemmed, and then freed from all dressing by steeping in cold and hot water. For the straining of colored infusions and decoctions, always choose cloths stained by use; for almost or quite colorless preparations, such cloths as are still in their natural condition.

Strainers of milling or bolting-cloth are valuable because they are readily permeable by thick or viscid liquids, especially emulsions. Flannel strainers should be altogether rejected for dispensing purposes. They are not only hard to clean, but they become unsightly, too dense from shrinking, and are always dusty.

The solution of salts, extracts, manna, etc., in the hot, unstrained infusions or decoctions is not permissible; this is effected only in the strained liquids, even if thereby a second straining becomes necessary.

Every strained liquid is allowed to deposit for some minutes and then decanted from any sediment which may have formed. Decoction of salep forms an exception. Comp. above, p. 29 (February number.)



Hand apparatus with gas burner.

MACERATION—DIGESTION.

A maceration is a cold infusion of twenty-four hours' duration unless the prescription directs a different length of time (comp. above), and by digestion is understood the action on a drug for twenty-four hours of a fluid at a temperature of from 50 to 70° C.

All these operations are effected in a vessel closed by a lid when the menstruum is water, wine, or vinegar. With dilute alcohol the digestion is effected in a glass flask closed with a moist bladder perforated by a pin hole [or better, in a glass flask provided with an upright condenser]. The temperature prescribed by the German Pharmacopœia for the digestion in the preparation of tinctures (35 to 40°) is much lower, but the duration of the digestion is eight times as long. The straining after a maceration or digestion is the same as in the case of decoctions.

Ethereal liquids can only be used for macerations, even if the prescription directs digestion.

GELATINS OR JELLIES.

Gelatin, jelly, *gelatina*, is the name applied to a non-fluid, very soft, slightly elastic, homogeneous, usually transparent or translucent, non-plastic mass melting at a low heat, which moves tremulously when touched. Its consistence is such that a portion can be smoothly cut off with a spoon and a depression remains in the place of the

removed portion. When quite cold, the gelatin must not flow from the inverted vessel; it must also yield to light pressure, but resume its previous form after the pressure is removed.

For every 100 *Gm.* of gelatin are required: 4 *Gm.* of isinglass, 5 *Gm.* of dry gelatin, 10 *Gm.* of Irish moss, 15 *Gm.* of Iceland moss, 10 *Gm.* of starch flour, 10 *Gm.* of hartshorn, 3 *Gm.* of salep, 5 *Gm.* of tragacanth.

The gelatins prepared by boiling, skimming, etc., do not reach their required consistence until they have stood for three hours in a cool place.

The additions to the gelatins are made to the hot strained liquid or to the hot skimmed fluid.

In order to impart to gelatin made of Iceland moss the proper consistence and render it more durable, there is frequently added to it a small quantity of isinglass or white glue, about 2 *Gm.* for each 100 *Gm.* of strained liquid. For the production of a clear gelatin, it is customary to add to the concentrated strained decoction of a vegetable drug some (one-tenth to one fifth) sugar, even if not prescribed, then to skim it while gently boiling, and after the liquid has boiled down to the directed measure, to make the remaining additions such as wine and medicinal syrups. Volatile oils, rubbed up with some sugar, and other substances, too, such as tinctures, bitter-almond water, etc., are added to the still warm liquid, that is, before it gelatinizes.

Colla piscium, *ichthyocolla*, isinglass in flakes, for the preparation of gelatin, is either macerated in pieces in the water for twenty-four hours, stamped to a pulp in a mortar after the water has been poured off, and then dissolved in the decanted water on the steam-bath, or else it is cut into very small shreds and heated, short of the boiling point, best in the steam-bath, with twenty times the quantity of water or wine, under occasional stirring, until dissolved. Then the sugar or syrup and the remaining water or wine is added, the whole reheated and strained. The mixture is then set at rest in a cool place until cold. Good isinglass forms with twenty-five times its weight of water a gelatin of good consistence which bears small additions such as fruit juices, tinctures, medicinal syrups, without losing its body. Acids, acid fruit juices (deprived of pectin) disturb the gelatinization more or less. An admixture of bodies containing tannin is not admissible.

Iceland moss, 20 parts, are boiled several times over an open fire with 200 parts of water; after straining, 20 or more parts of sugar are added, and boiled down to 100 parts with frequent skimming. An addition of one-tenth of Irish moss to the Iceland moss furnishes a more sightly, more lasting, and consistent gelatin. The German Pharmacopœia, moreover, contains directions for a *Gelatina Lichenis Islandici* which is to be strictly followed where the prescription calls for this preparation.

Irish moss, *Fucus crispus* [*Chondrus crispus*] furnishes a perfect jelly when boiled with only 30 parts of water. Where the physician leaves the production of the jelly to the judgment of the dispenser, 10 parts of the cut moss are boiled a few times with 200 parts of water, strained, 20 parts of sugar added, boiled again, skimmed, strained, etc., to obtain 100 parts. The G. Ph. also contains directions for a *Gelatina Caragaheen* which, of course, must be followed if the prescription calls for the pharmacopœial preparation.

Helminthochortos jelly is prepared in a similar manner as that from Irish moss, but it is preferable to add to the worm moss one-tenth of Irish moss and to bring the strained product, inclusive of the added sugar, to ten times the quantity of the worm moss.

Salep gelatin. 10 parts of the finest salep powder are mixed with an equal quantity of sugar and stirred up with cold water so that no lumps remain, then at once mix with not more than 250 parts of boiling water, heat for a few more minutes on the water-bath, and sweeten with 50 to 100 parts of simple syrup (*Syrupus Rubi Idæi*, *Syrupus Aurantii corticis*, etc.). Not to be strained.

Arrowroot, *Amylum Marantæ*. The gelatin is prepared in a similar manner as salep gelatin, but 20 parts of arrowroot are used for 200 parts of strained liquid.

For "hartshorn," 100 parts take dry white gelatin, 10 parts, dissolve in 200 parts of hot water, add simple syrup (30 parts), and strain.

Jelly from fresh *fruit juices*. The latter are mixed with half the quantity of sugar, boiled and skimmed, and strained. To 100 parts of juice after skimming, sometimes 1 part of isinglass or 2 parts of gelatin are added. The pectin in the fruit juices forms with the sugar the gelatinizing substance.

If almond emulsion is to be added to a jelly, the emulsification is performed in a warmed mortar with the warm (not hot) fluid which is to gelatinize.

If the prescription requires that the jelly be clarified, the decoction is mixed with albumen diluted with some water, and the boiling continued until the albumen is coagulated and separable by straining. Clarification with albumen, however, is superfluous if sugar enters into the gelatin, because the sugar during boiling favors the separation of impurities so that the clarification can be effected by skimming. Jellies of salep and arrowroot are never clarified, because they do not admit of it.

Jellies are dispensed in porcelain pots or glass vessels, the mouths of which admit a large teaspoon.

Gelatina Balsami Copaibæ, *Gelatina Olei Jecoris Aselli*, *Gelatina Olei Ricini* are not jellies in the above sense; they are, it is true, called oil gelatins, but the term solidified fats (*e. g.*, *Oleum Ricini solidificatum*) would be more appropriate. They are prepared by melting together 5 to 6 parts of the oil or balsam with 1 part of spermaceti and allowing to congeal. For *Gelatina Olei Ricini* take for 8.5 parts of oil 1.5 parts of spermaceti, or perhaps white wax.

In case the physician demands the preparation of one of these jellies with gelatin, the following prescription should be used:

℞ Gelatinæ puræ..... 20.0 Gm.
Solve in
Aquæ fervidæ.....150.0 "
Syrupi simplicis....100.0 "
Tum adde
Olei Jecoris Aselli..250.0 "
(Olei Anisi stellati.gutt. 5)

[Triturate in a wedge-wood mortar until a homogeneous mass is produced; allow to cool partly, and pour into glass vessels, which should be put in a cool place].

SATURATIONS.

By the term saturations (*Saturationes*) are understood in receptology fluid mixtures of carbonic bases with acids which, in consequence of their mixture, have approximatively lost their alkaline and acid qualities, and retain a portion of the liberated carbonic acid in solution.

On account of this contained carbonic acid such a mixture is generally distinguished by the term effervescent draught. Other synonyms are: *Potio Riveri*, River's draught.

The remedial value of a saturation depends in general upon its being freshly prepared and upon its containing an appropriate amount of carbonic acid, which latter also gives it its special flavor. It should barely change the color of red litmus paper, but should have a passing reddening effect on blue litmus paper, owing to the contained carbonic acid; that is, it should be as neutral as possible. It is not necessary that it should contain so much carbonic acid as to foam like champagne; but under no circumstances will the rules of receptology permit the mixing of saturations in mortars, or to filter or strain them.

In order to prepare a saturation *secundum artem*, the carbonic salts and the acids must be mixed in a proportion ascertained by previous experiments, and in such a state of purity that they mutually saturate each other after mixture, and so as not to require straining or filtration after saturation.

As regards the quantities in which carbonic bases and acids, such as are ordered by physicians for saturations, neutralize each other, they must be approximately calculated stœchiometrically; some acid liquids, too, according to the directions of the pharmacopœia, must contain sufficient acid to saturate certain quantities of an alkali, *e. g.*, vinegar.

[On pages 430 to 432 of the U. S. Ph. (1880) will be found tables giving the saturating power of the principal acids and alkalies.]

Lemon juice, of the strength of vinegar containing six per cent of hydrated acetic acid, corresponds to a solution of 7 parts of crystallized citric acid in 93 parts of water.

For the preparation of a saturation the German Pharmacopœia furnishes a specimen in the directions for *Potio Riveri* (*saturatio officinalis*). The directions read:

Take Citric Acid, four (4) parts; and
Distilled Water, one hundred and ninety (190) parts.

Put them into a bottle which will be nearly filled by them.

The solution having been effected by agitation, add in small quantities, specially selected clear pieces of

Pure crystallized Carbonate of Sodium, nine (9) parts.

Solution having again been effected by agitation, the vessel should be closed.*

All saturations should be prepared strictly in this manner unless otherwise directed by the physician; that is to say, a bottle is to be filled with the acid fluid until there is room only for the volume of the alkali to be added; then the latter is put in, if it be a carbonate or its solution, gradually in small portions and with gentle agitation of the acid fluid. At the end of this operation the bottle is closed.

The directions for *Potio Riveri* show, furthermore, that special retention of the liberated carbonic acid is not admissible, hence that the escape of the gas should be unhindered.

According to the old-established way, a saturation is thus prepared: Into the bottle intended for the saturation the alkaline carbonate solution is first weighed and then the acid, but very cautiously. Then the bottle is taken from the scales and allowed to stand for several minutes, with occasional gentle agitation. When the alkaline carbonate solution is added to the acid, some of the developing carbonic acid always rises into the vessel containing the alkaline liquid and causes the formation of bicarbonates, which, at moderate temperatures, adhere to the walls of the vessel, and, being thus withdrawn from the liquid, decrease

* For the preparation of different quantities of *Potio Riveri* or *Saturatio officinalis* of the Germ. Ph. are required:

Potio Riveri, Gm...	30.0	40.0	45.0	50.0	60.0
Acid. citric.....	0.6	0.8	0.9	1.0	1.2
Aq. destill	28.5	38.0	42.7	47.5	57.0
Sod. carb. cryst..	1.35	1.8	2.0	2.25	2.7
Potio Riveri, Gm...	70.0	80.0	100.0	120.0	150.0
Acid. citric.....	1 4	1.6	2 0	2.4	3 0
Aq. destill .. .,..	66.5	76.0	95.0	114.0	142.5
Sod. carb. cryst...	3.15	3.6	4.5	5.4	6.75

its saturating power. Moreover, the alkaline carbonate solution is specifically heavier. When poured in, therefore, it suddenly penetrates the acid layer, and a violent effervescence results, which not rarely expels a portion of the fluid from the vessel. But if the alkaline carbonate solution be put first into the vessel, and the acid solution be allowed to flow slowly along the inner wall of the vessel, the latter collects above the alkaline solution and only very slight effervescence takes place. In this way the mixture and mutual saturation of the liquids can be easily and gradually effected by gentle, repeated agitation of the bottle, with less loss of carbonic acid.

Special additions to saturations are always made after the effervescence has ceased. When the foaming has moderated, any additions, such as syrup, extract solutions, tinctures, etc., are weighed in. If there be added to the saturating fluids, before effervescence, any mucilaginous fluids such as mucilage of acacia, or syrup of althæa, the effervescence and foaming will be too violent, and will either moderate very slowly or force the mixture out of the bottle in the shape of froth. Although in the preparation of mixtures it is a fundamental rule always to weigh the smaller quantities of fluid additions first into the mixture glass, an exception is made in this case for the above reason. Alcoholic components which contain no resins, volatile oils, ether, or similar substances, can be weighed in before the saturating fluids are mixed. The separation of resin or volatile oil, and the volatilization of ethereal substances with the escaping carbonic acid, should be avoided as much as possible.

Tartrate of potassium is added in powder after the saturation has been effected. In order to prevent the separation of bitartrate of potassium, the saturation is generally kept slightly alkaline. Solution of *Succus Liquiritiæ* must always be added last, owing to the combination of the acid with the glycyrrhizin.

Salts must not be dissolved in the warm saturation, but the solution is effected by adding the salts in powder, or else they are dissolved in the water, which, possibly, is to be added to the saturation. At all events, saturations are not to be mixed with warm or hot fluids, because the carbonic acid would thus be expelled.

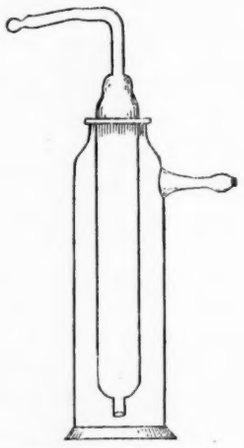
Where the physician demands a saturation containing a great deal of carbonic acid, he will indicate this by prescribing bicarbonate of sodium or bicarbonate of potassium. In that case the indifferent substances are first weighed into a strong mixture bottle, then the powdered bicarbonate is added, is allowed to sink to the bottom without agitation, and lastly, the acid fluid is added, the bottle closed with a very tight-fitting cork and capped, avoiding every agitation, and the mixture placed in cold water, where it is gently moved to and fro until the bicarbonate is dissolved. 100 *Gm.* of cold water will in the summer easily absorb and retain the carbonic acid from 1 *Gm.* of bicarbonate of sodium.

The saturations most frequently called for are those of carbonate of potassium with vinegar or lemon-juice. The acid contents of the vinegar of the German Pharmacopœia are pretty definitely limited; but still it would be advisable to keep on hand a saturating vinegar, the acid contents of which are adjusted to an equivalent quantity of liquor potassii carbonatis.

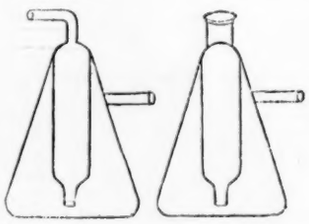
Saturations with lemon-juice. Freshly-expressed lemon-juice usually contains acid enough for 63 to 65 *Gm.* of it to saturate 15 *Gm.* of liquor potassii carbonatis, and if the acid contents were larger or smaller, such a saturation is diluted with enough distilled water to bring the quantity of the saturation to six times that of the liquor potassii carbonatis employed.

The average yield of expressed juice from one lemon is 22 *Gm.* For 5 *Gm.* of carbonate of potassium, or 15 *Gm.* of liquor potassii carbonatis, calculate the juice of three lemons.

It happens now and then that lemons cannot be obtained or that none are at hand in the night-time. In such a case of necessity the lemon-juice is replaced by an equivalent quantity of crystallized citric acid. In that event the saturation is colorless unless it contains some colored addition, while the saturation from fesh lemon-juice is faintly yellowish and not quite clear. This admissible substitution, therefore, should be marked on the prescription. In many establishments filtered *Succus Citri recens* is kept in stock.



Habermann's wash-bottle.



A citric acid solution having the saturating power of vinegar (containing 6 per cent of absolute acetic acid) is obtained by dissolving 7 parts of crystalline citric acid in 93 parts of distilled water.

If the prescription bears the remark *q. s. ad saturationem acidam* or *alkalinam*, this means that the saturation is to have a faintly acid or alkaline reaction. In this case the saturation is made as usual, only the acid or alkali is increased by one-twentieth.

Bottles for Saturations.—Saturation mixtures are always dispensed in bottles of strong glass. A slight rise of temperature increases the expansive power of the free carbonic acid so that the bottle is very liable to burst. There is in the market a prescription bottle with doubly thick walls, which is in general use for dispensing saturations. The bottles must always be tightly corked.

When delivering the saturation to the messenger, he should be told that the bottle must be placed well corked into cold water, unless a label be affixed which reads: "Keep the bottle cool by placing it in cold water."

Occasionally the messenger or patient should be informed that this medicine foams, and that its value depends on that fact. For some patients from the lower classes would not take the saturation mixture under the impression that it was spoiled. The physician had failed to enlighten them beforehand.

(To be continued.)

A NEW WASH-BOTTLE AND ABSORPTION APPARATUS.

A NEW form of wash-bottle, devised by J. Habermann, is shown in the accompanying cut. It has this advantage, that it absolutely prevents the retrocession of its liquid contents into the generating vessel, when the pressure in the latter sinks below that of the external air, as is sometimes the case when generating hydrochloric acid, ammoniacal or other gases. Generally, this is prevented by making the tube carrying the gas dip only a very slight distance below the liquid. But in this way the gas never can be properly washed. In the new wash-bottle, the gas must pass to the very bottom, and, should the liquid at any time recede, the enlarged portion of the wash-tube is capable of holding the whole of the liquid contents until air can enter below and thus equalize the pressure.

On the same principle, the author has constructed a new absorption-apparatus, such as is used, for instance, in the quantitative determination of ammonia.—*Chem. Centralbl.*

New Forms of Suppositories.

THE latest forms we read of in the pharmaceutical press are:

1. Hollow suppositories of gelatin, provided with a lid or cap, which may be fused on without difficulty, after the ingredients have been introduced into the cavity. We have always had a mild prejudice against gelatin suppositories, at least in the case of drugs which are expected to be absorbed rather quickly. But we can conceive only a limited number of cases where the use of a hollow suppository charged with an active drug would be preferable to one made of cacao butter, with which the drug had been thoroughly and evenly mixed.

Hollow suppositories of cacao butter have been in use for some time.

2. Canellated suppositories, that is such as are provided with grooves on the outside. These are said to facilitate their introduction, and the underlying idea in this case seems to have been the principle of the rifled cannon, or rather that of the "rifled cartridge."

Choline Recognized as one of the Ptomaines.

L. BRIEGER has obtained from human cadavers which were only in the incipent stages of decomposition, a compound which was recognized, from its double platinum-salt and especially its double gold salt, as *choline* (that is trimethyl-oxy-ethene-hydrin-ammonium-hydroxide), and he arrived at the conclusion that no other poisonous substance is probably present in the incipient stage. After a time, however, more intensely poisonous substances must be developed, which are not yet isolated and studied. Some of them appear to possess the characteristic toxic effects of muscarine (the alkaloid of the poison-mushroom).—*Ber. d. Deutsch. Chem. Ges.*

Note.—Choline is also known as bilineurine or sinkaline. It is formed when an aqueous solution of trimethylamine [$N(CH_3)_3$], is mixed with ethene oxide [C_2H_4O]. When pure, it is a colorless crystalline mass very soluble in water. By appropriate treatment it may be converted into neurine, a derivative of the lecithine of the brain.

Resinified Essential Oils, which have acquired a disagreeable odor by long keeping and exposure to air, may sometimes be restored to a fairly normal condition by shaking them with a small quantity of a paste made from borax, animal charcoal and water, separating the clear oil and re-distilling.—*Rundschau.*

Mineral Acids in Solid Form.

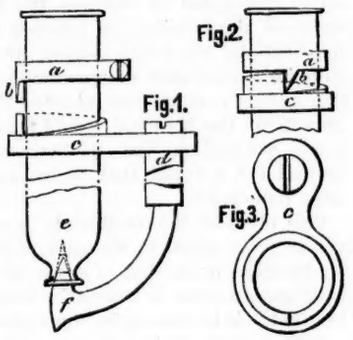
THE danger which is connected with the carrying of liquid mineral acids to any distance, and the high freight expense it involves, have induced Dr. H. Grüneberg to look for a method of putting these acids in solid form, so as to make them more easily transportable, and to do away altogether with the risk of the danger of breakage. Thus English sulphuric acid used by the petroleum refineries of Roumania was advantageously replaced by solid anhydride. It was also tried to make liquid acids to be absorbed by porous indifferent bodies. Kieselguhr (infusorial earth), which is found in almost inexhaustible quantities in Lüneburg, was found to be the substance most adapted to absorb and retain mineral acids in quantities relatively considerable. After being deprived, by drying, of about fifteen per cent of moisture which it contains on the average, kieselguhr can absorb from three to four times of its weight of sulphuric acid at 66°, and twice its weight of muriatic acid at 20° B. and nitric acid of 36°. No difficulty is found in the operation. The silicious earth is dried and pressed through sieves, then taken into a shallow wood, iron, or stone vessel, and the acid is added in a thin stream. The mixture is well agitated, and the lumps which at first form are broken up. The apparatus now used for the manufacture of superphosphates can be used for this process. The obtained product may be sifted. The sulphuric acid thus changed into solid forms attracts moisture very quickly, and has to be therefore packed at once. For packing, lead-lined sheet iron vessels can also be used, which are covered internally with a layer of gum lac.

Sulphuric acid solidified as above can find application in the form of a dry powder in several branches of industry, such as the refining of petroleum, or of the fat oils, in the manufacture of dynamite, in stearine works, in the manufacture of carbonic acid for aerated waters (it is exported in large quantities to India for this purpose), in the manufacture of superphosphates, and of sulphate of ammonia, etc. In these cases the acid powder is put into direct contact with the substance to be treated, such as raw petroleum, glycerin, powdered phosphate, carbonate of lime, etc., and is then diluted by the addition of water to the degree of concentration required for the operation. In those cases in which only the acid in the liquid state can be employed, such as for metal, ores, etc., the acid can be previously liquefied by being placed together with water in lead lined tanks, the remaining powder being then separated from the liquid by means of filter presses.

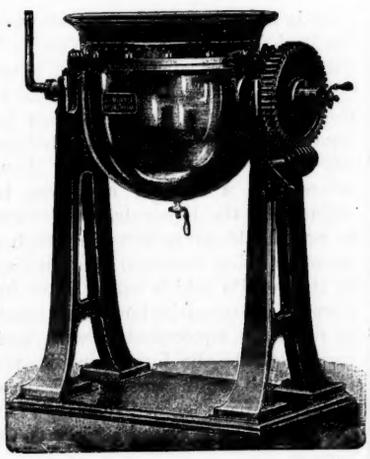
The high cost of transportation of the liquid acids may render the application of this solidified product convenient in far distant countries.—*Scien. Am. Suppl.*

IMPROVEMENTS IN BURETTES.

A NOVEL method of controlling the rate of flow of a test-liquid from a burette is shown in the accompanying illustration (Figs. 1 to 3), only the upper and lower portions of the burette being shown, and the burette stand being omitted. With the burette holder is connected a brass rod, *d*, which may be raised or lowered at will, and which holds the upper part of the burette by means of a guide-plate (Fig. 1, *c*; also Fig. 3), and at its lower portion is connected with a piece of glass rod *f*, the upper point of which fits perfectly true into the lower opening of the burette, the lower point being slightly drawn out to facilitate the dropping of the test-liquid. In the first burettes constructed on this plan, which was originated by John Greiner, of Munich, the upper point of the glass tube, intended to go inside of the orifice of the burette, was made too short (shown by the straight line across); recently the point is made longer, as shown by the dotted lines. A collar *a* is fastened to the burette above the guide-plate in such a manner that the projection *b* is in contact (or nearly so) with the plate *c* (see Fig. 2), and at the same time the glass tube *f* must



close the lower orifice hermetically. On now slightly turning the ring *a* holding burette, the point of the projection *b* travels gently upward along the inclined plane of the guide-plate (see Fig. 2), and the burette thereby becomes slightly raised from its glass-stopper *f*, whereupon more or less of the liquid will flow from it. The inclined plane carried by the guide-plate should ascend, at least in its initial portion, only very gradually, to permit the fine adjustment of the flow of liquid.—*Chem. Centralbl.*



AN IMPROVED STEAM-KETTLE.

G. J. MUERLLE of Pforzheim, Germany, is the inventor and manufacturer of an improved form of copper steam-kettle, that has been in use for some time. Its advantage is that it may be turned by means of the endless screw, worked by a winch, so as to be at any desired angle of inclination, at which angle it remains until the winch is turned again. The steam enters through one of the axles supporting the kettle, and the waste-water either passes out through the other or may be let off from the pet-cock below. A kettle of this construction is, of course, much easier to be emptied of its contents, and to be cleaned. It has a decided advantage over those which have an outlet for the contents at the bottom, although for very large-sized kettles this is probably the only feasible plan.

To Hasten the Deposition of Precipitates.

WHITTEL has found that the addition of a few drops of chloroform causes the immediate deposition of chloride of silver in the liquid in which it has been precipitated. Its influence, of course, is purely mechanical. It may be used to advantage and for the same purpose also in other cases.

A Compound Indicator for Acids and Alkalies.

A MIXTURE of an alcoholic solution of phenophthalein with dimethylaniline orange is recommended as indicator in alkalimetry or acidimetry. The mixture is lemon-yellow when quite neutral, whilst when acid it is rose-red; when alkaline, deep-red.—A. GAWALOWSKI in *Bied. Centralbl.*

Valuation of Calcium Tartrate.

FIVE grains of the finely-powdered substance are heated with 30 C.c. of a ten per cent potassium carbonate solution for two hours, the solution is filtered, concentrated to 5 C.c., and mixed with an equal amount of strong acetic acid, and 100 C.c. of 90 per cent alcohol. After a few hours' standing, the hydrogen potassium tartrate is separated, washed with alcohol, and titrated with standard alkali.

If calcium carbonate is present at the same time, and this has to be estimated, ordinary volumetric methods cannot be employed, and the carbonic acid has to be determined directly by Scheibler's apparatus or some similar method.—L. WEIGERT in *Zeitsch f. Anal. Chem.*, 1884, 357.

Atomic Weight of Bismuth.

UP to the year 1851, the atomic weight of bismuth was assumed to be 213, which figure was derived from experiments made by Lagerhjelm. In 1859, Dumas obtained as the mean of very careful experiments, the value 210.46, since which time the figure 210 was generally adopted as the atomic weight (so also in the last U. S. Pharm.). In 1883, Marignac re-examined the subject with great care and minuteness, and obtained as a mean result (which he, however, himself declares to be not quite exact enough) the value 208.6. Finally Löwe as well as Schneider have recently obtained figures very close to 208. Hence it may be concluded that the latter is much nearer to the truth than 210.

Sulphur Soap.

A CORRESPONDENT of the *Seifenfabrikant* recommends to prepare an efficient and homogeneous sulphur soap in the following manner:

Grind or rasp very dry "ground-soap," that is such soap which is prepared from best *fresh* fats, and in which the whole of the latter is saponified [a dried quantity of Conti's white Castile soap will answer very well], and add to it the requisite quantity of sulphur dissolved in linseed oil. To prevent the mixture from becoming semi-liquid, add to it enough powdered orris root, which serves at the same time as perfume, and potato flour, to impart to it the requisite consistence. The grinding and rasping is best performed by the regular machines of the soap manufacturer, and the finished mass should also be passed through the machine, after which it may be formed in suitable pieces. If no machine is available, the mixture may be prepared in an ordinary mortar and afterward formed by hand.

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EDITORIAL.

THE CAMPION plan has not found the support which its success demanded, and has been practically abandoned by the manufacturers and wholesale dealers, so that now the retail dealer finds himself at the point where he set out two years ago, viz., dependent upon his own skill, business tact, and capital for his commercial security and success. There is, indeed, some doubt as to whether he is as well off as before this movement began, for after all that has been said in advertisements of prominent cutters and in the secular prints about the "ring" prices, the public, more than ever before, is inclined to be critical and to drive a sharp bargain in the purchase of the apothecary's wares.

As an offset to the last-mentioned condition, there is a possibility that the general discussion of the subject may have the effect of discouraging some young men from engaging in a business in which competition is so active, the profits so small, and the legal and commercial restrictions of such increasing severity.

IN considering the relations of the retail pharmacist to the jobbing trade, it may be well to take into account the custom which is said to be growing in some localities, of jobbers and manufacturers of proprietary goods furnishing the capital with which the retail establishments are conducted. In just so far as this condition of affairs exists, is it useless to attempt any action calculated to advance the interest of the retailer, as opposed to those of the wholesale dealer. It is quite impossible that such a complication as this can have so retarded the growth of the National Retail Druggists' Association, but is there not ground for a belief that it has had some influence?

This phase of the retail trade is not yet as pronounced in the case of the pharmacists as in that of some other callings, but there is reason for thinking that it is increasing in importance, and that no inconsiderable amount of the competition and loss of custom from which the old and well established stores are now suffering, is owing to the opening of stores in their neighborhood with capital furnished by the very jobber, it may be, of whom they are procuring their own supplies. Such an arrangement may result in competition with an establishment which, practically, has facilities for purchasing goods on better terms, and is able to sell at lower rates than the independent dealer.

IT is said that the recent effort of the Excise Commissioners of New York City to exact of apothecaries a liquor dealer's license was a consequence of the efforts being made to oblige the liquor-dealers to comply with the Sunday-closing law, and to pay, themselves, for a license, and was instigated by the liquor-dealers. There is now little probability of such a measure being enforced; but in view of the results which might have followed if apothecaries had been obliged to fight the liquor-dealers with their own methods, the humorous illustration copied from the *Weekly Drug News*, on page 60, will clearly show the odds to be greatly in favor of the former.

If the liquor-dealer is wise he will leave the affairs of the apothecary alone, for his competing neighbor has every advantage of him in the way of "chromo," and the corned-beef and cracker-bowl of the free-lunch counter would stand but a sorry chance beside the confections of the pharmaceutical laboratory.

THE Sixth International Pharmaceutical Congress will meet at Brussels August 31st, 1885, and will last until September 6th. We have been requested by the Committee of Organization, of which Dr. D. A. Van Bastelaer is President, to bring this notice to the attention of the pharmaceutical profession. Reserving further details for a later occasion we have only time now to give a summary of the subjects proposed to be laid before the Congress:

The Congress will group all questions that may be submitted into four sections.

1. Professional questions.
2. Questions relating to theoretical or practical pharmacy.
3. Questions referring to chemistry in its relation to hygiene and public health.
4. Questions relating to general, applied, biological, or legal chemistry.

Four subjects will be laid before the Congress by the Committee of Organization for the purpose of being discussed in the full meeting:

1. The plan of a universal pharmacopœia worked out by the committee appointed since the last Congress of London.
2. Pharmaceutical education; preliminary requirements or education; character and standard of scientific studies, etc.
3. Adulteration of articles of consumption; legislation, etc., relating to the same.
4. Drinking water: its characters and tests.

THE bill appropriating $200,000 for building a fire-proof structure for the safe-keeping and preservation of the books, records and other possessions of the Medical Library and Museum belonging to the Surgeon-General's office, passed the House of Representatives on the 16th of February. The books, pamphlets, and manuscripts belonging to this library, it is said, form the largest and most valuable collection of medical and surgical literature in existence. The Museum, like the Library, is said to be unexcelled in extent or value by any like collection in the world. In the Surgeon-General's office are deposited the Surgical and Hospital records of the Union armies. These are in constant use as evidence in adjusting pension claims. Duplicates of them do not exist, and their destruction would entail an irreparable loss upon thousands of pension claimants as well as upon the Government.

All the collections are now kept in the building formerly known as Ford's Theatre, in which President Lincoln was assassinated. This structure is a fire trap, and it is surrounded by old buildings dry as tinder.—*Tribune.*

A CRIMINAL charge of forgery of examination papers has been lately brought by the Ontario College of Pharmacy against a person, who fraudulently presented himself as a certain W. Harron, of Millbank, who had applied to the registrar for examination under the pharmacy law, and who had been notified to appear for examination on the appointed day. The impersonator of Harron was recognized by the registrar as Charles A. Krick, lately attending one of the medical schools. He was subsequently arrested and brought before a magistrate, who referred the case to the Grand Jury, which has since then brought in a true bill.

This will teach all the Examining Boards of Pharmacy a lesson, for as business seems to have been formerly conducted by more than one of them, the possibility of fraudulent personification had by no means been totally excluded.

The Best Fusing Agent for Silicates.

HOLTHOFF recommends for this purpose the bicarbonate of sodium, in quantity of 12 to 15 times the amount of the silicate. Both the latter and the bicarbonate (the pure crystallized form) must be very finely powdered. One-fourth of the bicarbonate is first put in to the platinum crucible. Another fourth, or rather more, is intimately mixed with the silicate in a warmed capsule, and this mixture further mixed with another fourth upon glazed paper, when it is transferred into the crucible. The last fourth is used for rinsing the capsule and paper and placed on top of the whole mixture in the crucible, which should not be much more than half full. At first only the bottom of the latter should be carefully heated, then the heat is gradually increased during 15 minutes, until the lower half of the crucible is at a low red heat, without allowing the mass to melt. Finally, the heat is raised, if necessary, with the blast lamp. When the mass is in a quiet flow, without evolving any more gas, the operation is finished.—*Zeitsch. Anal. Chem.* and *Chem. News.*

The Noyau, or Noyeau, Vine or Plant: Ipomœa sinuata, Ortega.

FOR several years past, when driving through Colombo with any stranger, I scarcely lost an opportunity of attracting attention to a very common and abundant exotic climber which grows everywhere here, and often covering fences and small houses with a mass of dissectro green leaves and large white flowers with cerise centres and one of the best quick-growing plants to cover an arbor or to conceal small outhouses. I attract particular attention to this plant by pulling some of its leaves, crushing them between the fingers and then presenting them to my friends, and asking them what the odor reminds them of, when the reply is variously given as "noyau," "cherry pie," "heliotrope," "prussic acid," or "bitter almonds." My reply is: "This is the noyau plant, and this is a practical lesson in botany."

Although the plant is alluded to in several works on botany as producing noyau, I had not noted the fact until Mrs. O'Brien, the wife of General O'Brien, attracted my attention to it at Bray Crooke Hall, saying: "This is what we call the noyau plant in the West Indies, at the same time giving me the lesson of crushing the leaves, which I have not forgotten, and which I now have the pleasure of recording for the benefit of the readers of the Ceylon *Observer* and of the *Tropical Agriculturist*.

What the liqueur sold as noyau is really composed of is as doubtful as the composition of most other liqueurs, judging by the various accounts, some of which I here give; but that noyau, pure and simple, is manufactured from the *Ipomœa sinuata* Ortega is distinctly recorded, and from no other source, as far as my information goes. Noyau appears to be a liqueur flavored by several vegetable products, and this is about all the information which I can find in all the books I can refer to in Colombo.

The Ipomœa sinuata, from which noyau is said to be made, was originally a native of Georgia and Florida, but was introduced many years ago to Asia from tropical America, and is now found in N. W. India, Hindostan, Bengal and Ceylon, and is cosmopolitan in the tropics. It is properly the Ipomœa sinuata of Ortega, and has been described as Convolvulus dissectus, Linn., Ipomœa dissecta, Choisy, and has been figured by Jacquin, Hort. Vindob, ii., 74, t. 159, and is described by C. B. Clarke in the "Flora of British India" (vol. iv., p. 214), in Baker's "Flora of Mauritius" (p. 207), and Don's "Gard. Dict.," iv. (p. 297).

As stated above, it is a most common plant in Colombo, and to persons going into the fort through Slave Island, I may call their attention to a plant of it which, some weeks ago, covered the entire roof of the last house on the right hand side (before crossing the railway) of the married quarters of the non-commissioned officers of the Royal Artillery; but since the south-west monsoon has set in, this plant is somewhat curtailed in its dimensions. It was introduced to Ceylon before 1824, according to Moon's "Cat. Ceylon Plants" (p. 13).

The following are the extracts referred to above: Convolvulus dissectus abounds in prussic acid, and is one of the plants from which the liqueur noyau is prepared. Bot. Mag., 3,141; Lindley's "Vegetable Kingdom," p. 631. The kernel of Cerasus occidentalis is used for flavoring the liqueur noyau. Lindley, l. c., p. 558. Ipomœa sinuata Ortega, the noyau vine.—Schomburgh's "Barbadoes," p. 612, No. 655. The statement in Eng. "Cyc. Nat. Hist.," ii., p. 130, that noyau is got from Ipomœa pandurata is a mistake. Convolvulus dissectus abounds in hydrocyanic acid, and is said to be one of the plants from which the liqueur noyau is prepared.—Maunder's "Treasury of Botany," i., p. 326.

Noyau (Fr.) a liqueur flavored with the kernels of Cerasus occidentalis; it is also said to be sometimes prepared from Convolvulus dissectus—Maunder, l. c., ii., p. 794. The kernels of species of Cerasus impart flavor to noyau, ratifia, cherry brandy, and maraschino.—Balfour's "Class Book of Botany," p. 806.

Noyau, a rich cordial, flavored with the kernels of the nuts of bitter almonds, or of peach stones, "Imperial Lexicon," ii., p. 140.

Noyau, a name in France of a liqueur said to be prepared from the kernels of Cerasus occidentalis, a tree of the plum family, native of Jamaica, where it is called laurel. It is more than probable that the kernels of the common cherry are also used in the preparation of noyau, and it is said that a species of Convolvulus (C. dissectus) furnishes material from which the liqueur is made. Noyau is chiefly used for flavoring confectionery. Smith's "Dictionary of Names of Common Plants," p. 289.

To Dr. Trimen I am indebted for the following extract from the *Botanical Magazine*, which shows that the Cerasus sphœnocarpa is the noyau cherry of the West Indies, which in some way, not known to me, has got mixed up in this respect with the Cerasus occidentalis. "In the preparation of noyau probably several different vegetables are employed which contain prussic acid. A species of bindweed, the Convolvulus dissectus, abounds in prussic acid, and to that degree, as Dr. Nicholson of Antigua informed me, that "if this medicine shall be found deserving the high character which some physicians have bestowed upon it, it may become valuable in a country where this prussic acid cannot be preserved many days in a pure state. Hence this is a frequent ingredient in the preparation of noyau."—Hook., in *Botanical Magazine*, t. 3141, Cerasus sphenocarpa, Noyau cherry of West Indies.

From plants of the Ipomœa sinuata growing on fences in Union Place, the following notes are given: Stems, petioles, and lower parts of peduncles covered with long hairs; leaves palmate, glabrous or nearly so, cut down nearly to the centre into seven lanceolate, deeply toothed or pinnatifid lobes; peduncles one to four flowered, and with the flowers together about the same length as the leaves; sepals elliptic, oblong, obtuse with a minute cusp, glabrous, fleshy, inflated before the fruits are ripe, then papery and spreading; flowers white, shallow funnel-shaped about two inches across, capsule about half inch in diameter, glabrous, two-celled, normally four-seeded, inflated and divided into four parts; seeds black, glossy, smooth. The flowers begin to open about 10 A.M. in Colombo, and are open nearly the rest of the day.—*Weekly Ceylon Observer; Pharm. Journ.*

Pure Calcium Hydro-Sulphide.

THOUGH pure calcium hydro-sulphide has often been referred to by writers, and apparently been obtained by several investigators, yet it has remained unknown until now except in dilute solution.

Böttger's directions for preparing hydro-sulphide of calcium as a depilatory, which are copied into many works on chemistry and pharmacy, are misleading, as, according to them, hydrogen sulphide is to be passed into thin milk of lime until the mass acquired a bluish-gray color. The production of this color is due to the formation of ferrous sulphide, and this must take place as soon as any soluble sulphide is present, and, therefore, before any quantity of lime has been acted on by the hydrogen sulphide, As to the mass thus obtained, which is to be smeared upon hides as a depilatory, the little true hydro-sulphide in it is in solution in the liquid part of it.

Only recently Dr. Edward Divers and Mr. Tetsukichi Shimudzn, of Tokio, have succeeded in obtaining the hydro-sulphide in crystals. As it is not unlikely that the substance will yet find employment in medicine, we will give their mode of preparation (from *Jour. Chem. Soc.* 1884, July), in their own words:

Nothing can be simpler in the abstract than the preparation of calcium hydro-sulphide, consisting, as it does, in treating calcium-hydroxide with hydrogen sulphide in presence of a sufficiently small quantity of cold water, and then crystallizing the solution. But the details of the process require much attention, and this fact probably explains how it is that the hydro-sulphide has not hitherto been obtained. The difficulties of its preparation depend upon its instability and exceeding solubility in water.

If hydrogen sulphide is forced through a semi-solid mass of calcium hydroxide and water, the whole will become liquefied and increased in volume. To this clear solution much lime has still to be added, and dissolved by hydrogen sulphide, before a saturated solution is obtained. This lime might be added as hydroxide, but it is practically requisite to use the oxide, as, unless the hydroxide were dry, too much water would be yielded by it, and if it were not in fine powder troublesome lumps would form from it, and the operations of drying and pulverizing thus required, would probably be attended with carbonatization by the atmosphere. Quicklime prepared from precipitated calcium carbonate is almost necessary for preparing the hydro-sulphide.

The preparation of a crystallizing solution of calcium hydro-sulphide takes days to complete, and all through the process air must of course be excluded. In hot weather it is hardly possible to prepare it without cooling down, and at all seasons cooling with snow or ice facilitates the process.

The lime we used was made by igniting, in platinum crucibles, calcium carbonate which had been precipitated from an alkaline alcoholic solution so fused calcium chloride. It was always found free from sulphate and carbonate, but was never so pure as to dissolve in the large proportions required without leaving some small residue. We believe, indeed, that dissolution to

saturation by hydrogen sulphide will be found a more delicate wet test of the purity of lime than any other.

We tried hydrogen sulphide prepared from several sources, but ended by using the ordinary gas from iron sulphide, washed, and filtered through a column of cotton, and sometimes dried with calcium chloride.

The vessels we finally employed for making crystallizing solutions were formed out of tubing, 18–20 mm. in diameter. The body of the tube was about 1½ decimetres in length, and ended in long drawn-out limbs of about 5 mm. in diamter. One of these was bent acutely just beyond its origin in the main part of the tube. The tube being fixed in a nearly vertical position, with its bent limb below, the gas could be sent through the limb up from the very bottom of the liquid, and thus made to keep the undissolved lime well agitated. Occasionally when working with almost finished solutions, a stout platinum wire was, without stopping the current of gas, pushed down the upper straight limb of the tube into the solution to detach adhering matters. Except at these moments, and when adding more lime, the exit-tube was always in connection with a wash-bottle, serving as a guard against the entrance of air.

Before setting the solution to crystallize, it had to be left to clarify by the subsidence of excess of lime and the impurities always present in small quantities. It had then to be decanted into a crystallizing tube. This was done in a stream of hydrogen sulphide, after the tube had been turned to the horizontal position to avoid bubbling of the gas and disturbance of the sediment. The two tubes were connected by black rubber tubing during the decantation. The mouths of the crystallizing tube were afterwards closed by caoutchouc caps coated with paraffin, but, except for the few moments occupied in transferring, the solution touched glass only.

In order to prepare a solution of the necessary concentration, between two and three parts only of water must be used with one of calcium oxide. But as large a proportion as that may be added, and yet through evaporation from the hot mass, nearly dry calcium hydroxide be obtained. Evidently, therefore, the addition of this amount of lime to the water must be made gradually. To start with, one part of lime, dropped into somewhat less than four parts of hot water, gives, from the purity and fine division of the lime, about the stiffest paste of hydroxide that can be worked with. The mixing must be done in the preparation-tube itself. Thin milk of lime may be used instead, but in that case a larger quantity of lime will have to be added afterwards. In the thick paste dissolution of the hydroxide proceeds, with evolution of heat and with comparative rapidity, along the channels which the hydrogen sulphide works out for itself in forcing its way through the paste.

Admixture of the undissolved mass of the hydroxide with the concentrated solution thus formed, is attended with evolution of heat, and the replacement of hydroxide by so abundant a crystalline precipitate of hydrated sulphide as to render the whole very thick again.

Dissolution of the first quantity of lime having become complete, fresh lime is added to the clear, thin liquid. The lime reacts more mildly with the solution than with simple water. If very well agitated, the lime passes gradually into a slimy matter, consisting probably of very fine crystals, before it passes into solution. Often, however, some crystalline lumps form, which, however, very slowly, even if left at rest, break down into the slimy matter. When calcite-lime is used, hard crystalline masses generally form, which are afterwards practically irreducible, so that such dense lime is hardly to used successfully. The lime dissolves best when added gradually, and is then less likely to choke up the tube with hard crystalline sulphide. We have found it necessary to make additions of lime about four times, in order to reach the point of saturation, and leave some excess in proof of having done so. We have already described the decantation of the formed solution from this excess and the small unavoidable impurities.

If the liquid is kept cold during the passage of the gas, in order to favor reaction, crystals of the hydrosulphide at last form in abundance ; but this is not the case at ordinary temperatures. Saturation to the crystallizing point being reached, the current of gas is stopped, and the liquid left in the tube to clarify, very carefully sealed up, at the ordinary, or a slightly warm temperature, in order that most of the crystals which may have formed in the cold shall redissolve. After decantation, the clear solution is again kept in ice, when it crystallizes, and the more abundantly the better it has been saturated at a low temperature.

The calcium hydro-sulphide thus obtained is separated from its mother-liquor by draining and blowing a current of hydrogen sulphide through the mass of crystals, the tube being all the while immersed in snow. They cannot be removed from an atmosphere of hydrogen sulphide without undergoing change, and admit therefore of no further drying, except by a momentary swinging of the tube to expel adhering liquid centrifugally. In warm weather, the crystals evolve hydrogen sulphide even in an atmosphere consisting of that gas.

Zinc in Drinking Water.

THE increase in the use of galvanized iron, especially in the form of water tanks and pipes, has lead to a reopening of the question as to the possible injurious effects from the use of such water. It is a matter of importance, then, to us how far our knowledge extends on this subject, and I will collect here all of the known facts, so far as I have been able to get at them.

The so-called galvanized iron is, of course, nothing more than iron dipped in a bath of zinc and so superficially coated with it and, to a certain extent, alloyed with it. The character of the protection afforded the iron is galvanic (hence the name), the two metals forming a galvanic couple, so that under the action of any exciting liquid, the zinc and not the iron is attacked. That zinc dissolves in potable waters has long since been shown by the experiments of Boutigny, Schaeffèle and Langonné. Distilled water and rain water dissolve it more readily than hard water. Especially is water containing carbonic acid capable of this solvent action. So much may be taken up that the water becomes opalescent and acquires a distinctly metallic taste. It seems that by the action of water, hydrate and carbonate of zinc are gradually formed, and that this action is more rapid in the presence of certain saline matters, but is weakened by the presence of calcium salts.

As to the injurious effect of such waters, authorities differ. Fonssagrives has investigated the question, consulting the statistics of the French navy and the recorded experiments of others, adding, however, none of his own. The French Government had, before this, appointed a committee to make a special report on the subject, and the investigations of Roux in 1865 and 1866 furnished evidence enough of possible injury to health from water stored in galvanized iron tanks to lead to an order from the Minister of Marine prohibiting the use of such tanks on board ships of war. Boutigny attributed grave effects to the use of these zinc-containing waters, looking upon it as probably resulting in epilepsy. Fonssagrives, however, maintains that the zinc is not cumulative and produces no bad effects unless taken in large doses. Doubt is thrown on this position, however, by the fact that his assertions as to the limited solubility of zinc in ordinary drinking water are not sustained by experiments. Without doubt such waters have been used for considerable length of time and no injurious effects have been noticed. This may have been due, however, to the hardness of the water, and hence the small amount of zinc dissolved. Pappenheim states in contradiction to the assertion of Fonssagrives that zinc vessels are dangerous and must be carefully avoided. Dr. Osborne, of Bitterne, has frequently observed injurious effects from the use of waters impregnated with zinc. Dr. Stevenson* has noticed the solvent action of rain water on galvanized iron, and states that probably its continued use would cause injury to health. He recommends as a convenient test for the presence of zinc in potable waters, the addition of potassium ferrocyanide to the filtered and acidulated water. Zinc gives a faint white cloud or a heavier precipitate when more is present. Dr. Frankland† mentions a case of zinc poisoning where well water, cantaining much dissolved oxygen and but little carbonic acid, was used after passing through galvanized iron pipes. Prof. Heaton‡ has recorded the analysis of spring water in Wales, and a second analysis of the same water after passing through half a mile of galvanized iron pipe, showing that the water had taken up 6.41 grains of zinc carbonate per gallon.

A similar instance of zinc-impregnated water has come under my own observation, and I append the analytical results. The water from a spring 200 yards distant was brought by galvanized iron pipes to a dwelling-house and there stored in a zinc-lined tank which was painted with white lead. The water became somewhat turbid and metallic-tasting, and its use for drinking purposes was discontinued. Analyses were made after the pipes had been in use about one year. A somewhat full analysis of the spring water was made under my direction by Mr. J. C. Roberts. The analyses of water from the tank and directly from the pipe, I carried out only so far as zinc, iron, and tests for lead were concerned. The results are calculated in grains per gallon of 231 cu. in.:

Constituents of the water:

Silica	2.45 grains.
Lime	.23 "
Magnesia	.17 "
Alkalies	.43 "
Chlorine	.35 "
Sulphuric acid	.19 "
Carbon dioxide (calculated)	.45 "
Total residue on evaporation	4.34 "

The tank contained 4.48 grains of zinc carbonate per gallon, with a trace of iron and no lead. Water from the pipe gave 4.29 grains of zinc carbonate per gallon and a trace of iron.

It is evident then, when the dangerous nature of zinc as a poison is taken into consideration, that the use of zinc-coated vessels in connection with water or any food-liquid should be avoided.—F. P. VENABLE, PH.D., in *Journ. Am. Chem. Soc.*, vi., 214.

* Chem. News, 49, 107.
† Chem. News, 49, 115.
‡ Chem. News, 49, 85.

Magnesium Hydro-Sulphide.

HYDROGEN sulphide obtained from ordinary iron sulphide, and either sulphuric or hydrochloric acid, is passed into a large flask half or two-thirds full of water, holding magnesia suspended. If the magnesia happens to be carbonated, as is usual in its commercial forms, this matters little, although freshly-calcined magnesia is preferable, as being more easily dissolved. The proportion of magnesia to water must not be too great, one part of commercial impure oxide in ten parts of water being near the limit. An excess of magnesia seems to prevent the formation of such a concentrated solution as can be obtained when the proper quantity is not exceeded. The magnesia slowly dissolves in the stream of gas, much of which, it is hardly necessary to state, passes away unabsorbed. Where, therefore, as in most laboratories, hydrogen sulphide gas is in nearly constant use, the flask of magnesia may conveniently be interposed between the generator and such solutions as require treatment with the gas. When the solution has been prepared, the flask can be corked to exclude air, or at once used if wanted. It may be preserved unchanged for any time by sealing over the cork with wax or paraffin. Magnesium hydro-sulphide solution may also be prepared, of course, as in the magnesia method of sulphur recovery by the reaction between calcium sulphide and magnesium chloride; but for laboratory purposes such a method presents no advantages.

Some Properties of Magnesium Hyposulphide Solution.

A solution made to contain 4.35 per cent of magnesium, equal to 16.31 per cent of magnesium hydro-sulphide, $Mg S_2, H_2$, may serve to represent what will usually be obtained by proceeding as above directed. Its sp. gr. was 1.118 at 12°. Such a solution is capable of yielding 12 per cent of hydrogen sulphide by weight, and readily in practice about 10 per cent, the amount varying according to circumstances.

The solution, when the impurities of the magnesia have settled down, is nearly colorless, its slight color being due to poly-sulphide formed by the action of ferric oxide in the magnesia or of air. Exposed to the air, or heated to about 60° in a flask with delivery-tube, it gives off hydrogen sulphide. But exposure to air also results in oxidation of the hydro-sulphide and thiosulphate. However in a solution left at rest, oxidation is much impeded by the formation of a firm, colorless, transparent, amorphous film on the surface of the liquid, consisting apparently of magnesium hydroxide, but possibly hydroxyhydro-sulphide, Mg SH.OH. The solution does not readily, if at all, absorb carbon dioxide from the atmosphere in the early stage of its decomposition.

With regard to the effect of heat, already mentioned, a temperature of 60–65° gives a steady evolution of hydrogen sulphide for some time, and this can be maintained for a considerable time longer by raising the temperature to 90–100°. As hydrogen sulphide escapes, magnesium hydroxide separates out in the solid state. These facts are now well known in connection with the process of sulphur-recovery. The poly-(penta?) sulphide that may be in solution is only very slightly decomposed even at a boiling heat, but in so far as it is, it yields hydrogen sulphide, solid sulphur, and magnesia. The yellow poly-sulphide is, however, readily decomposed by hydrogen sulphide, the products being magnesium hydro-sulphide and sulphur. It is hardly necessary to add that magnesium hydro-sulphide will decompose with an acid, and may thus be made if desired to yield its hydrogen sulphide like calcium, barium, iron, and other sulphides.

Employment of the solution as a source of Hydrogen Sulphide free from Arsenic.

The mode of employing it will be obvious. The flask containing it, provided with a simple delivery-tube, and without washing-bottle, is to be heated, best on a water-bath, to the extent necessary to secure a steady stream of gas. It may often be an advantage to make the following arrangement: put the solution to be treated with the gas into a flask or bottle fitted with cork and gas entry tube, and connect its tube with the delivery-tube of the generator. Keeping the test-flask slightly open, warm the generator until the air is entirely expelled from both flasks, and then close the test-flask tight. The generator being kept warm, the hydrogen sulphide may be sent over into the solution under treatment without waste and without access of air. The level of the liquid in the tube of the test-flask will guide the operator in heating the generator. The gas being unmixed with hydrogen will be absorbed much faster than it is commonly seen to be, and with such an arrangement some little attention is necessary, or the solution may be carried over into the generator through the reabsorption of the gas by the magnesia, should this from any cause be allowed to cool a little.

The evolution of hydrogen sulphide from the magnesium salt by heat has advantages over that by the addition of acids to alkaline earth and other sulphides; firstly, in being steady and under perfect control, and, secondly, in yielding the gas free from any other active or inactive, except a little water-vapor, free from the spray which effervescence by acids causes and in no need therefore of any washing.

When the magnesium solution has been used until nearly exhausted, it has only to be placed again, when cold, in a current of ordinary hydrogen sulphide to be restored nearly or fully to its first strength as a source of this gas. Magnesium hydroxide, carbonate, and poly-sulphide will all thus be converted to hydro-sulphide, and only the little thiosulphate remain unchanged.

After using many times, or after much accidental exposure to the air, the contents can be replaced with fresh magnesia and water with but little cost or trouble.

Manufacture of Aluminum.

HERETOFORE aluminum has always been made by treating its chloride with metallic sodium as a reducing agent. But the great trouble in handling this material and its very high cost have made such a process difficult and expensive—the price of aluminum at present being higher per ounce troy than silver. This has limited its uses and its manufacture in commercial quantities to the sole factory in Paris, France.

William Frishmuth, a German chemist, living in Philadelphia, and a pupil of Wœhler, who discovered aluminum, has been working for twenty-eight (28) years to solve the problem of making cheap aluminum in commercial quantities. Within the past few years he has discovered and secured patents throughout most of the civilized world, for a process that now produces aluminum in a commercial way at one-third the cost of any other, with almost a certainty of being reduced to $1.25 per pound avoirdupois, when worked in a large plant, with proper technical and practical management, ample capital and perfected mechanical and chemical means. Instead of using metallic sodium, as before mentioned, he uses a vapor, produced or generated in a suitable vessel from a mixture of sodium carbonate, or other suitable compound of sodium, and carbon or other reducing agent. And this sodium vapor, not metallic sodium, as used in the Deville process, is made to react in various ways upon the aluminous materials to produce aluminum. Therefore the economy of the Frishmuth process is about as follows, estimated for illustration on a theoretical basis. The manufacture of 20 pounds of aluminum requires 115 pounds of sodium carbonate, at a cent a pound, or 50 pounds metallic sodium at from $2.50 to $3.50 a pound. Therefore one pound of aluminum requires, by the Deville process, 2½ pounds metallic sodium, costing from $6.25 to $8.75; or by the Frishmuth process, 6 pounds sodium carbonate, costing say 6 cents. Practical operations are said to increase the quantities by the Deville process to from 3 to 4 pounds of metallic sodium, and by the Frishmuth process to say 12 pounds sodium carbonate.

Both Deville and Frishmuth have to use the double chloride of aluminum and sodium, although Frishmuth has a patent for his successful use of the double fluoride of aluminum and sodium in making aluminum. This is another great item of cost in making this metal. But Frishmuth has made improvements in making the double chloride of aluminum and sodium that reduce its cost to a few cents a pound, and consequently that of the metal. As this double chloride is the cheapest of a few known chemical substances used in making aluminum cheaply and in commercial quantities by chemical or electrical processes, the saving in cost, through such discovery by Frishmuth, in making this metal, will be very great, and almost as much as by the use of his sodium mixture in place of metallic sodium.

On account of the use of sodium and chloride, the wear and tear on retorts, crucibles, and apparatus is usually great. But in the apparatus now used in Philadelphia, designed by Frishmuth, this item of cost is much reduced, and will be further reduced when heated by Wilson produced gas instead of coke.

The metal is superior in quality to the French, being purer and whiter. Its specific gravity is 2.73. It has been tested in New York, London, and Paris, in a commercial way, and can be sold at the market price. All manufacture has been in the experimental and developing way, and Frishmuth has sold metal thus made to the extent of many thousands of ounces. Recently he made in a few days several ingots of 40 ounces troy each, the quality of which was severely tested.

The use of the metal will increase as the price decreases, and when sold eventually, say at 30 cents an ounce, the consumption here and in Europe should be 120,000 ounces troy a day. It has greatest value as an alloy, especially with silver and copper, as it gives a non-tarnishing and non-corrosive quality to such metals, and greatly increases the tensile strength. Aluminum bronze is made by alloying 10 pounds of aluminum with 90 pounds of copper, and has a tensile strength of three tons per square inch more than Bessemer steel.

Frishmuth has invented a solder for aluminum that welds the metal with itself or with copper, tin, lead, and iron. The color is the same as the metal, and is of great benefit to the arts and industries.—*Scient. Amer.*

Winchester Observatory.—This establishment, connected with Yale College, corrected 6,326 clinical thermometers during the present year.

Nascent Hydrogen Dioxide as a Bleach.

FROM present appearances, the history of the introduction of chlorine into the bleachery is about to repeat itself in the case of hydrogen dioxide. Chlorine was first used in the form of its solution, in which the fibre or tissue to be bleached was placed. Years passed away before a solution of salt which would yield chlorine was substituted for that of the element itself; but as soon as the substitute was introduced, its superiority was recognized, and the preference for bleaching powder (chlorinated lime) soon became general. As the continuous web of cloth is run through the bleach, and through the acid baths, the chlorine is set free on and among the fibre. Thus applied in the act of being set free, that is to say, in the nascent state, its effect is far more powerful than that of a solution of it, however concentrated, could possibly be.

Is not hydrogen dioxide, now, we believe, used in this country only in solution, destined to undergo a similar revolution in the methods of applying it as a bleach? If effective when thus used, will it not be more so when it is generated in contact with the fibre? The substance from which it is generally prepared, barium dioxide, is colorless, and it has no injurious action on the fibre. The acid or salt used to decompose the barium dioxide, and form the hydrogen dioxide, may be chosen from those which also do no damage either to animal or vegetable tissues. No obstacle, therefore, seems to exist to the extended employment of a substance which the *Textile Record* hailed years ago as "the coming bleach," and which the Brothers Jacobson, of Berlin, have recently been experimenting upon with highly satisfactory results.

Like many other bodies valuable in tinctorial chemistry, hydrogen dioxide labors under the disadvantage of being known by several different names. Some technical journals call it hydrogen peroxide; others reverse this, and say peroxide of hydrogen; others, binoxide of hydrogen; others again, oxygenated water; and yet others use the fancy name, or "name to sell," ozonized water. They all mean the same thing, neatly expressed by the chemical formula H_2O_2.

Manufacturers of hydrogen dioxide for industrial purposes have suffered much inconvenience and loss from its ready decomposition, when being transported, and this property of the compound led to demand for another, which, while equally rich as a source of oxygen, would bear transportation. The barium dioxide, BaO_2, seemed to fulfill all the indications, and to it the above experimenters turned their attention.

Schoene had shown that barium dioxide in water, alone, undergoes slow decomposition, evolving oxygen. The Brothers Jacobson have demonstrated that the evolution can be increased by the addition of various salts to the water. The most favorable results were obtained with soluble alkaline silicates, sal ammoniac, alkaline borates, or the salts of the fatty acids. Chloride of magnesium and phosphate of soda act less strongly, and sulphates still less.

The proportion of the salt to the water may vary according to circumstances, but the following mixture will serve in most cases.

Barium dioxide.....	1 part
Silicate of soda.....	1 "
Water.....	...100 parts

For bleaching vegetable fiber, such as jute, cotton, paper pulp, etc., the solution should be more concentrated, while for animal fiber a larger proportion of the silicate of soda would be disadvantageous because of the alkali set free. The time required for jute and cotton cloth is from one to two days. The bleaching liquor can be used again as long as barium dioxide remains undecomposed. Materials to be bleached in this way must have been well scoured. The silicate of soda may be first dissolved in water, and the barium dioxide then added, or the two solids may be mixed, and then dissolved together.

Whenever the nature of the objects to be bleached permits, bleaching with barium dioxide in an alkaline solution is preferable, because the hydrogen dioxide formed is more powerfully decolorizing in an alkaline than in an acid or a neutral solution. This is probably owing to the formation of soluble dioxides, which are more easily decomposed than hydrogen dioxide itself.

For certain purposes, as the bleaching of oil, neutral solutions answer better; for example, those obtained by mixing barium dioxide with salts of magnesia.—*Textile Record.*

A New Method of Estimating Nitrogen.

A NEW method for estimating nitrogen in ammonia, which does not require elaborate apparatus, and is free from the many sources of error connected with most other processes, has been proposed by Kjeldahl, in the *Zeitsch. für Anal. Chem.* It can be used for determining the nitrogen in all cases, except when it is present in form of volatile acids, such as cyanogen compounds and oxides of nitrogen.

The new method consists in heating the substance containing nitrogen for some time with a copious quantity of concentrated sulphuric acid to a temperature approaching the boiling point of the latter, and then to oxidize the resulting solution with an excess of dry and powdered permanganate of potassium. By this treatment the whole of the combined organic nitrogen is converted into sulphate of ammonium, and it is afterwards only necessary to supersaturate with solution of soda and to distil in order to be able to determine the total nitrogen as ammonia in the usual manner by titration. The sulphate of ammonium formed is not destroyed or lost by the energetic oxidation, as has been proved by careful experiment.

The details of the manipulation are very simple. The substance, whether solid or liquid—and, if solid, it need not even be powdered—is weighed or measured into a small flask, in which the subsequent treatment is executed. In the case of substances containing about 10 per cent of nitrogen, about 0.1 to 0.2 Grm. are sufficient; if less is present, up to 1 Grm. may be taken. 10 C.c. of strong sulphuric acid, known to be free from ammonia, are now introduced by means of a pipette, the flask, in an inclined position, placed upon wire gauze over a gas flame, and the contents heated for one or two hours to near the boiling point of the acid, which may be known from the occasional slight bumping. If the substances retain their nitrogen very tenaciously, such as quinine, morphine, etc., a little fuming sulphuric or anhydrous phosphoric acid may be added to the contents of the flask in the beginning. When the action of the acid is completed, which usually results in a solution of the solid, the flame is removed, and a fine spray of finely-powdered permanganate of potassium contained in a tube closed with a fine wire gauze and inserted in the neck of the flask, is made to rain down upon the acid in the flask until the latter assumes a green color. The flask is then cooled, the contents diluted with water, 40 C.c. of solution of soda, sp. gr. 1.300 added, and the flask immediately connected with a well-cooled condenser previously arranged and provided with a receiver containing standard volumetric acid. If the original flask is too small, the contents may be transferred to another, the water being used in portions to wash the original flask carefully. To prevent bumping during the distillation, a few pieces of zinc may be placed in the flask. The estimation of the ammonia by finding the amount of unsaturated acid is a simple operation and accomplished with great sharpness. It may be performed in several ways. The author prefers to add a mixture of iodide and iodate of potassium (which give up a quantity of free iodine equivalent to the free acid present), and so estimate the amount of free iodine by volumetric solution of hyposulphite of sodium.

A New Method of Estimating Urea by Titration.

H. J. HAMBURGER gives the following new method for estimating urea:

REAGENTS.—1. *Alkaline solution of bromine.*

Dissolve 30 Grm. of sodium hydrate in 1 liter of water, and shake the liquid with about 20 cubic centimeters of bromine. The resulting clear yellow liquid will become somewhat cloudy after 15 minutes, and must be filtered through asbestos, after which it remains clear. More than 20 Cm. of bromine must not be used, because the volume of the bromine solution required for an analysis is the larger, the less bromine it contains.

2. *Solution of arsenite of sodium.* Weigh 19.8 Grm. of arsenious acid, warm on a water bath with a solution of 10.6 Grm. of pure carbonate of sodium, and dilute to 1 liter.

(Since arsenite of sodium may be had in the market, the reagent could be also prepared by dissolving 38.4 Grm. of this salt in water to 1 liter.)

3. *Iodine solution.* Dissolve 12.7 Grm. of iodine in water, with the aid of iodide of potassium, to 1 liter.

Before the actual analysis, it is necessary to adjust the relation betweeen the arsenite and the iodine solution. For this purpose, 10 C.c. of the former, mixed with 20 C.c. of a saturated solution of carbonate of sodium, and a few drops of clear starch solution are first mixed, and this is titrated with the iodine solution until a blue tint just begins to appear.

The relation of the alkaline bromine and of the arsenite solution is ascertained by measuring off 10 C.c. (or more) of the bromine solution, adding an excess of 1.2 to 3 C.c. of arsenite solution, passing carbonic acid gas through the mixture for about 15 minutes, rinsing the gas delivery tube into the liquid, and then adding 20 C.c. of a nearly saturated solution of carbonate of sodium and starch solution. The excess of arsenite of solution is now titrated back with the iodine solution. Finally, the bromine solution is compared with a solution of urea of known strength, by cautiously adding the bromine to the urea solution until the latter acquires a yellow tint, then adding an excess of 1.2 to 3 C.c. of bromine solution, and finally titrating back with the arsenite and the iodine solution.

[When the liquids are once adjusted, it will be found that the analysis takes a comparatively short time, particularly if a series of them is to be performed.]

Execution of analysis. Measure off 15 (or 10, or 20) C.c. of urine; add bromine solution cautiously and under agitation until no more gas is given off, and then add 1.2 to 3 C.c. more of bromine solution. After 5 or 10 minutes, add arsenite solution until the color of the liquid turns lighter yellow, and then test with starch and iodide of potassium paper, to see if the latter is still rendered blue [this is only ne-

cessary in the first titration in a series]; if not, add about 3 C.c. of arsenite solution. Now pass carbonic acid gas [best from a cylinder or reservoir] through the liquid, add about 20 C.c. of carbonate of sodium solution, and a few drops of starch paste, and determine the excess of the arsenite by the iodine solution.

From the data thus obtained, the quantity of urea may be easily calculated.—*Chem. Centralbl.*

On Koettsdorfer's Method for the Examination of Butter for Foreign Fats.

WHILE testing butters according to the methods of Hehner,* Reichert,† and Koettsdorfer,‡ it occurred to the writer that an examination of vegetable oils by the last two of these methods might furnish some interesting results. The object in view was to ascertain whether it is possible to mix butter or oleomargarine with an oil in such a manner that detection would be impossible by any one of the above methods.

In every case the analysis was conducted as directed in the papers referred to.

The following oils were examined in duplicate by the Koettsdorfer process, singly by the Reichert :

	Mgrm. KOH	C.c. 1-10th Nor NaOH
Olive oil	185.2	0.2
Cotton-seed oil	191.2	0.3
Peanut oil	196.6	0.4
Palm oil	196.3	0.8
Oil benne	192.4	0.6
Oil sweet almonds	187.9	0.3
Poppy oil	192.8	0.5
Rapeseed oil	183.0	0.3
Linseed oil	195.2	0.2
Cocoa butter	199.8	1.6
Cocoanut oil	250.3	3.7
" " washed	246.2	2.7

It will readily be seen that none of the above oils could be mixed with butter without fear of detection by both processes, with the notable exception of cocoanut oil.

The cocoanut oil used was a refined article, of evidently superior quality. Exposed to the air for more than a week, it did not turn rancid, nor did its characteristic odor become perceptibly stronger.

Koettsdorfer fixes the limits of the number of Mgrms. of caustic potash requisite to saponify a Grm. of real butter as between 221.5 and 232.4. Cocoanut oil, it will be seen, exceeds by a considerable amount the highest of these limits.

After the first results were obtained, it was suggested that soluble free fatty acids might be present to render the result high. Accordingly, about 20 Grms. of the oil were thoroughly washed with boiling water to the amount of six liters. An examination then furnished slightly lower results by the Koettsdorfer process, while the figures obtained by the Reichert process were reduced in much greater proportion. It is then possible to mix an oleomargarine with cocoanut oil so as to bring the results within Koettsdorfer's limits. In proof of this, the following mixtures were made and results obtained, the object being to approach nearly the limits of Koettsdorfer :

Cocoanut Oil.	Oleomargarine.	Mg.KOH per Grm.
49.3 p. c.	50.7	220.0
70.2 p. c.	29.8	234.9
Washed Oil.		
53.1 p. c.	46.9	223.6
75.9 p. c.	24.1	234.9

The oleomargarine used required 193.5 Mg.KOH. per Grm.

* Fresenius, Zeitschrift, vol. xvi., p. 147.
† Ibid , vol. xviii., p. 68.
‡ Ibid., vol. xviii., p. 199.

It is improbable, also, that these mixtures could be detected by the Hehner process, since cocoanut oil yielded 86.43 per cent of insoluble fatty matter.

The Reichert process would, with such a mixture, be sure to show the adulteration, for the number of cubic centimetres of $\frac{1}{10}$th normal NaOH would be under one-third the amount requisite for a genuine butter.

In Dietzsch's "Nahrungsmittel," 4th edition, p. 212, mention is made of cocoanut oil as an adulterant of "Schmalzbutter," and in the *Analyst*, vol. xii., p. 93, a case is reported of its use to adulterate lard. In this latter case, the Koettsdorfer process would serve as a test, since lard requires for saponification but 195.5 Mg.KOH per Grm., and an addition of only 10 per cent of the oil would raise the figures to 201.

If a process should ever be devised to render cocoanut oil completely inodorous (and it should be extensively used as an adulterant of butter), it will be seen that the Koettsdorfer process would be utterly worthless as a test, and the Hehner of scarcely greater value. Thus entire reliance would have to be placed on the method of Reichert.—RUSSELL W. MOORE, in *Chem. News*, Dec. 5th.

On the Decomposition and Detection of Carbon Disulphide.

IF baryta water is added to an aqueous solution of carbon disulphide, the reaction at ordinary temperatures is scarcely appreciable. If heat is applied there is quickly formed a plentiful white precipitate of barium carbonate, whilst the supernatant liquid takes a fine yellow color. In time the whole of the carbon present passes into the state of carbonic acid. This reaction is so definite that the authors found upon it a process for the quantitative determination of small quantities of carbon disulphide. The proportion of this compound dissolved in water sinks from 2 Grms. per liter at 3.4° to 1.05° at 41.0°, and becomes *null* at the boiling point of carbon disulphide. These experiments lead to the remarkable result that a solution of carbon disulphide in water behaves in a manner analogous to the solutions of gases which have no action on water.—G. CHANCEL and F. PARMENTIER in *Compt. Rend.* and *Chem. News.*

Copper and Zinc-Ammonium Compounds and their Technical Use.

MANY experiments have been made during the last few years, to make a practical use of the property of the compounds of ammonium with copper or zinc, of dissolving cellulose, for the purpose of manufacturing a sort of parchment. The process originally give by J. Scoffern is now being carried out on a large scale, and is especially used for silk, paper, and canvas. These fabrics are dipped into a concentrated solution of copper-ammonium until the external fibres are completely gelatinized. On drying upon steam-drums, they form a dense layer. In order to prepare a thicker kind of fabric, several thin sheets are drawn through the bath together, then pressed and dried. On careful drying, the copper united with the fibre to a green compound, which also protects the fabrics from insects and mould. Instead of copper ammonium alone a mixture of it and the corresponding zinc compound can be used. The latter does not act well when used alone.

The solution of copper which is employed, contains, according to the author, about 100 to 150 Grms. of ammonia and 20 to 25 Grms. of copper in 1 liter. It is prepared on the large scale, by allowing strong water of ammonia to act upon copper-turnings in presence of a current of air. From brass turnings a similar solution, containing copper and zinc, may be obtained. Zinc alone is but little attacked under these circumstances. If iron is present, the solution is accelerated in consequence of the establishment of a galvanic current. Pure solution of copper-ammonium (without zinc) has absolutely no effect upon iron vessels.

The solubility of copper, when treated with ammonia and air, diminishes rapidly with increasing concentration of the solution. Even under the most favorable circumstances, only a small part of the oxygen of the air is retained when passed through it. When the strength of the copper solution does not exceed 12 to 15 Grms. per liter, it is very permanent, and is not only useful for the purposes above mentioned, but also very serviceable for preserving wood. Fabrics treated by this process are known in commerce as "Willesden fabrics."—*Chem. Centralbl.*

Iodine Extraction.

THE process formerly employed in Antofagasta of treating the Caliche mother-liquors with sodium hydrogen sulphite did not extract more than 70 per cent of the iodine present (*Dingl. Polyt. J.*, 231-375). Loire and Weissflog first reduce the sodium iodate with calcium sulphide, and precipitate the sodium with copper sulphate and sodium sulphite. The calcium sulphide is produced by igniting calcium sulphate with coal in a rotating furnace. After complete reduction of the iodate, copper sulphate and sodium sulphite are added. The precipitated cuprous iodide is washed and dried.—*Dingl. Polyt.* and *J. Chem. Soc.*

The Permeability of Silver by Oxygen Gas.

L. TROOST has made an observation on the permeability of silver for oxygen gas, which may possibly become the basis for a method of manufacturing oxygen on the large scale.

It has long been known that platinum, as well as iron, at a bright red heat, are porous to hydrogen gas, and that *fused silver* absorbs oxygen which it does *not wholly* give up on cooling. This fact suggested the idea that silver, at a sufficiently high temperature, is just as permeable for oxygen as the above named element for hydrogen. On trial, this was found to be confirmed.

A pure silver-tube (of 1 cm. calibre and 1 millimeter thickness of silver), inclosed by a platinum cylinder, was heated in a suitable muffle, in the vapor of metallic cadmium. The silver tube was exhausted by a Sprengel pump and its exterior could be surrounded by any desired gas. It was found that at the temperature of boiling cadmium, oxygen slowly passes through the walls of the silver-tube, 6.1 C.c. of the gas being collected in one hour. This amount to 1,700 C.c. (or 57½ fluid ounces) per square meter of surface (about 50 fl. oz. per square yard). If atmospheric air is admitted to the outside of the tube, oxygen gas also passes through, though more slowly, and accompanied by only a trace of nitrogen.

When using a silver tube of only half the thickness (½ mm.) in silver, the rate of filtration of oxygen was about doubled.

It was also found that oxygen passes through the silver not only when it is pure, but also when it is mixed with other gases, such as carbonic oxide, carbonic acid, etc. Nitrogen passes through with the greatest difficulty.—*Journ. f. prakt. Chem.*, 1884, 134.

Listerine.

ACCORDING to the *New Idea*, the following will make a preparation resembling listerine:

Borax	gr. 64
Benzoic acid	" 64
Boric acid	" 128
Distilled water	fl. oz. 6

Dissolve with the aid of a gentle heat

Thymol	gr. 20
Alcohol	fl. oz. 3
Eucalyptol	♏ 5
Oil of Gaultheria	♏ 5
Oil of Peppermint	♏ 3
Oil of Thyme	♏ 1

Mix the watery and alcoholic solutions, let stand over night, then filter and add enough water to make sixteen fluid ounces, and render the liquid clear, if necessary, by cautiously adding a little alcohol.

Another imitative formula is given by the *National Druggist:*

Thymol	gr. 6
Boric Acid	" 30
Oil of Eucalyptus	drops 4
" " Wintergreen	" 1
Alcohol	f. ʒ 4
Glycerin	f. ʒ 4
Water, enough to make	f. ʒ 16

Hair Wa h.

DR. HOFFMANN, in the *Pharm. Rundschau*, recommends a hair wash prepared as follows: Digest 10 oz. of coarsely-powdered quillaya bark, and 1½ oz. of powdered capsicum, in so much spirit and water (equal parts) as to obtain 6 pints of a tincture. Then rub 2 oz. carbonate of ammonium with 4 oz. of cold water, and add to the tincture. When the salt is dissolved, add 1 pint of eau de Cologne. After five or six days, filter through a covered funnel, and add 12 oz. glycerin. Fill into well-stoppered bottles.

McCall Anderson's Dusting Powder.

THE *Drugg. Circ.* gives the following formula:

Starch	ʒ 1
Camphor, powd.	ʒ 1½
Oxide of zinc	ʒ ½

This powder should be rendered perfectly impalpable by sifting it through a fine cloth, and should be preserved in a wide-mouthed bottle. Another formula furnished by a correspondent to the same journal is:

Starch	16 parts
Oxide of zinc	8 "
Camphor	1 "

Hop Bitters.

A CORRESPONDENT of the *Drugg. Circ.* writes that before Hop Bitters were put upon the market, the following formula was sold around New York State. The writer states that he frequently put up the materials, and he is assured that the product is very much like the Hop Bitters sold. The sediment which appears often in the Bitters of the market, is said to be due to the bad condition of the water at Rochester, at times:

Hops	4 oz.
Dandelion root	1½ oz.
Mandrake root	½ oz.
Buchu, long	1 oz.

Put into a jar, add one gallon of boiling water, cover, after 12 hours strain, and to 7 pints add 1 pint of alcohol.

Deodorizing Disulphide of Carbon.

THE simplest way, according to Chas. L. Hay in the *Drugg. Circ.*, is to distil the disulphide with quicklime, after having allowed the latter to be in contact with the former for 24 hours. The distillate is to be received in a flask partially filled with clean copper turnings. The lime remaining in the retort is strongly colored.

Treatment of Frost-bite.

DR. L. G. DOANE, of New York, reports, in the *Therapeutic Gazette*, that the following application has been found excellent in frost-bite:

Carbolic Acid	10 drops.
Oil of Turpentin	1 oz.
Vaseline	1 oz.

Mix the vaseline and oil of turpentin by rubbing in a mortar, and then incorporate the acid.

Parabuxusinidine is the name of a newly-discovered alkaloid, found by Barbaglia in the twigs and green leaves of the box (Buxus sempervirens). Its crystals are microscopic, transparent, and colorless; insoluble in water, but very soluble in alcohol. A dilute solution gives intense acid reaction with litmus. It is bitter, melts at a low temperature, burns completely on platinum with evolution of smoke, and contains nitrogen.—*Chem. Tech. Centr. Anzeig.*

Borate of Quinine, in the form of an amber-colored crystalline powder, of a not unpleasant odor, bitter taste, and soluble in an equal quantity of water, has been found in the medical clinic of Bonn to be better tolerated than other salts of quinine, and of equal therapeutic value to sulphate or muriate, and it has the advantage of being less bitter and of causing less ringing of the ears.

Alveloz is a drug lately forwarded by the Consul at Pernambuco to the State Department, with a statement of its use in the treatment of cancer, several cases of which are alleged to have been cured by its application. Following its application to an ulcerating surface profuse suppuration occurs. The drug having been turned over to the Marine Hospital Service for trial, Surgeon General Townsend reports its use in a case of lupus of the nose of forty years' standing, which had resisted other treatment, but which was cured by this method in a few days.—*N. Y. Med. Jour.*

Gibier's Pills for Diarrhœa (*Union Médicale*):

Sulphate of Quinine	⅛ gr.
Extract of Aconite, Tannic Acid, of each	½ "
Extract of Opium	⅙ "
Spirit of Quince, Powdered Licorice, of each enough to make one pill.	

Resorcin in Laryngitis is recommended by Andeer as a local application, on account of its action as a disinfectant and local anæsthetic. Strong solutions are caustic, while dilute ones are merely astringent.

Resorcin, dissolved in castor oil, is a remedy recommended by Dr. Bogresh in the treatment of diarrhœa attended with foul-smelling discharges which contain micro-organisms, and fever with occasional delirium. For adults he gives ℈i. of resorcin dissolved in ʒv. of the oil (warm), to be taken at once [rather heroic ?], and to children, gr. viij., each, of the resorcin and oil.

Apomorphine.—Dr. Urber, of Darmstadt, relates a case of chronic asthma (thirty years' standing) which was permanently cured in three weeks by the use of apomorphine in doses of ¼ grain increased to ½ grain, thrice daily.

Iodoform Eruption.—Neisser reports six cases of eruption, of impetiginous bharacter, following the external use of iodoform. Relief follow d the stopping of the iodoform and the application of a 5% solution of acetate of alumi num.

Reddened Carbolic Acid.

MUCH has already been written on this subject, and it is by no means yet exhausted. In a recent paper by Dr. Hager (*Pharm. Centralbl.*), the opinions formerly held by him and others are first quoted. Then he mentions Kolbe's supposition, who ascribed the change in color to to the presence of other phenols, which view was adopted by Hager himself. Recently Dr. Hager received a communication from W. Fahlbusch, in which apparently strong proof was offered that the red coloration was due to the presence of iron. Though Dr. Hager could not detect any iron in a small sample of reddened carbolic acid which he happened to have kept in stock for a long time, he afterwards succeeded in finding this metal in the residue left after distilling a larger quantity of the reddened acid.

In a subsequent communication, Dr. Hager gives the results of a fractional distillation of the reddened acid, which appeared in form of a crystalline mass, at ordinary temperature, and contained about 9 per cent of water. Three fractions were separately caught, the first comprising $\frac{3}{10}$, the second $\frac{5}{10}$, and the third $\frac{2}{10}$ of the total quantity. All of these fractions were colorless, and only the last drops, owing to incipient carbonization, had a brown color. The residue was a resinous, dark reddish-brown mass, which did not contain a trace of iron. This fact, therefore, appears to throw doubt, after all, upon the iron as a cause of the coloration.

The first distillate or fraction obtained contained about 6 per cent of water, the second 3.5 per cent, and the third 11 per cent. The first fraction congealed in the neck of the retort, and had to be rendered liquid by warming. When again solidified it formed a transparent, crystalline mass. The second distillate formed a very firm, more whitis hmass, while the third remained liquid, and only became crystallized when cooled to 4° or 5° C., while it again became liquid at 15° or 16° C.

One thing is certain, namely, that reddened carbolic acid may be converted into a colorless body by rectification. This must, of course, be conducted so that the flame shall not come into direct contact with the glass retort, and the position of the latter must be such that the heavy phenol vapors can easily run down the neck. Should the latter be stopped up, the neck is first protected by a thin sheet iron cover, and the latter heated with a naked flame. The last $\frac{2}{10}$ parts should be collected separately, as they contain the largest quantity of water.

Dr. Hager proposes to reservethe three fractions thus obtained in order to ascertain whether they will remain colorless or not. In the residue left after the distillation he found a body present which appeared to have properties resembling those of corallin, and on treating the alcoholic solution of the resinous mass with oxalic acid, a red color was developed. This points to the presence of a tropæoline. It is, therefore, possible that the reddening of carbolic acid is due to the presence of bodies which bear a relationship to the coloring agents just mentioned.

Strong Solution of Cocaine.—Dr. Frænkel, of Breslau, in the course of his experiments with cocaine in diseases of the uterus, etc., found it necessary to employ a solution containing as much as 20% of the alkaloid. It was prepared from:

Cocaine hydrochlorate	1 part.
Distilled water	3 parts.
Alcohol	2 "

To be filtered *without* addition of acid.

A Clear Shellac Varnish.

A SIMPLE mode of clearing turbid lacquer or solutions (however strong) of shellac in spirits of wine, is to add to the same a quarter of their bulk of commercial "benzine" or refined petroleum spirit. If the mixture be agitated three or four times during the space of an hour and then allowed to stand it speedily separates into two distinct layers, the upper one is a solution of the fatty or waxy matter in petroleum spirit, the lower is a brilliant alcoholic solution of pure shellac. The petroleum spirit only dissolves to a small extent in the other liquid, and the latter when drawn off is easily freed from it by slightly warming, with gentle agitation. Crude lac of any kind may be caused to give an absolutely clear solution in alcohol if it first be roughly powdered and then washed with warm petroleum spirit once or twice so as to dissolve out all the fatty matter. This latter has the advantage of simplicity, while at the same time the quality of the lac is in no degree injured. — *Southern Coach Maker* and *Canad. Pharm. Journ.*

Solution of Resinous Substances.

A NOTE in a foreign journal has called the writer's attention to a method for dissolving resins which he has used successfully for some fifteen years, but which may not be generally known. It was first employed for making shellac varnish, when large quantities of that compound were required for export to the United States, and has many advantages over simple maceration, the principal being the saving of time effected.

The method is really a modification of Burton's circulatory displacement, though it does not appear that the discoverer of that plan ever applied it to the solution of resins.

In case of the solution of shellac the resin is put in a tin vessel, preferably of conical shape, and perforated plentifully with holes of at least one quarter of an inch in diameter. The vessel is suspended by three cords—as a scale pan—and through the point of intersection of the cords a stick is passed, so that, when this is lodged across the top of a barrel—previously deprived of its head—the vessel may hang at about a third of the depth of the barrel. The solvent, methylated spirit is now poured into the barrel, so that the vessel may be completely submerged. A cover should now be put on to prevent evaporation and the whole left undisturbed for two or three days, when the resin will have been completely dissolved, with the exception of a small portion of an insoluble tough residue, which should be rejected. The resulting solution will be clear. Stirring should be altogether avoided, as it retards the process by interfering with the operation of the force of gravity on which the method depends.

The writer has not tried this plan with other resins, but it would no doubt be of general application.

While speaking of shellac varnish, it may be well to make another useful suggestion, which can also be turned to account for other spirituous varnishes. When such varnishes are applied to surfaces at a low temperature or in a damp atmosphere, the film often becomes dull, or "chills," as it is technically termed. If a few lumps of ordinary carbonate of ammonium be placed in the varnish, and allowed to remain for a few days, this disagreeable result may be avoided. For transparent, colorless varnishes, for photographic use, this hint will be found applicable, and is worth remembering.—E. B. SHUTTLEWORTH, in *Canad. Pharm. Journ.*

Rare Accidental Effects of Salicylate of Sodium.—Dr. Dreschfield mentions in the *Medical Chronicle* a case of nephritis following diphtheria, in a female of 18 years, in which the use of salicylate of sodium, in doses of 10 grains, thrice daily, caused, after the third day, a rise of temperature to 103° and of pulse from 75 to 120, severe headache, drowsiness, dry and brown tongue, nausea and vomiting. The fourth day the symptoms were aggravated and accompanied with pain in left lumbar region, enlarged spleen, incessant vomiting, and difficult breathing. Stoppage of the remedy was followed by abatement of these symptoms, but a return to the use of the remedy caused their reappearance. Following the withdrawal of the remedy there appeared, after some days, an erythema of the whole surface, puffiness of the face and limbs, and the urine gave evidence of the drug to appropriate tests.

Thymol, Phenol, Salicylic Acid, and Boric Acid, according to Vigier, should not be used in too concentrated solution. two parts to one thousand of water being strong enough for salicylic acid or thymol, and thirty parts per thousand for the others. In these proportions no alcohol is needed to form a clear solution.

Paste for Labels which are Liable to Become Damp.—A paste is first prepared in the usual manner, from rye-flour to which some glue has been added. The mass is boiled, and for every 100 parts of it three parts of boiled linseed oil and three parts of turpentin are added. Labels affixed with this paste are said to remain adherent even when wetted.—*Rundschau.*

New Method of Preparing Chloroform, Bromoform, Iodoform.

THE "Chemische Fabrik auf Actien, vormals E. Schering," of Berlin, recommends a new process patented in its own name for preparing chloroform, bromoform, and iodoform by *electrolysis* from the corresponding halogen compound with alkalies or alkaline earths, in presence of alcohol, aldehyde or acetone, and with the aid of a gentle heat. For instance, 50 parts of iodide of potassium are dissolved in 300 parts of water and about 30 parts of 96% alcohol are then added. Through the warm mixture contained in a suitable vessel a constant stream of carbonic acid is passed, and at the same time it is electrolyzed. Iodoform then separates as a crystalline powder.

In order to obtain iodoform in large crystals, the iodide of potassium is dissolved in 20% alcohol, and the operation conducted as described above.

In the preparation of chloroform and bromoform the corresponding haloids are manipulated in the same manner, except that it is not necessary in either case to employ a current of carbonic acid gas.—*Dingl. Pol. Journ.*

Kamala (Rottlera), which occurs in the market in quite an impure state, usually containing an abnormal quantity of mineral matter, may be purified, according to Salzer, by treating it with a thirty per cent solution of chloride of sodium. This solution possesses a specific gravity which permits the pure kamala to float on top, while the mineral constituents will collect at the bottom. It is not necessary to treat the whole bulk of the powder this way, but generally only the residue remaining after passing the kamala through a very fine sieve. The portion floating upon the salt solution is removed, washed, and dried. —*Pharm. Zeit.*

QUERIES & ANSWERS.

Queries for which answers are desired, must be received by the 5th of the month, and must in every case be accompanied by the name and address of the writer. Unless special instructions to the contrary accompany the query, the initials of the correspondent will be quoted at the head of each answer.

When asking for information respecting an unusual or proprietary compound, always accompany the query with all the information you may possess respecting it, and, when it can conveniently be done, send a specimen of the label.

No. 1,433.—**Parchment for Dialyzers** (M. J. A.)

For all ordinary purposes, or for operations on a large scale, the commercial artificial parchment paper will answer very well. This may now be had of excellent quality, of various thicknesses, and can be bought in so-called endless rolls up to about 36 inches in width.

It will often be found that an apparently perfect surface of artificial parchment paper, when held up to the light, will show more or less pin-holes, some being scarcely distinguishable while others are quite large. These may be closed by applying to the spots, by means of a small camel's hair pencil, a little fresh gelatin solution and afterward a little bichromate of potassium solution (a fraction of a drop will be often sufficient). and then exposing the sheet to sun-light, when the gelatin will become insoluble. These spots probably permit but little or no liquid at all to dialyze, and hence too many should not be contained on *one* sheet.

The best dialyzing medium, after all, are natural animal membranes, such as the bladder or the intestinal gut. These are first soaked in water, then thoroughly cleaned, by scraping, from fat, etc., and finally treated with ether until the latter ceases to become colored or to dissolve any fatty substance. Finally they may be preserved under ether for years.

No. 1,434.—**The new Standard for Baume's Hydrometer** (U. V).

Owing to the uncertainty which is inherent in the method of stating the specific gravity of a given liquid in degrees of Baumé, the Association of Manufacturing Chemists of North America some time ago decided to adopt as a basis of calculation, for liquids heavier than water, the formulæ:

$$n = 145 - \frac{145}{a} \text{ and } a = \frac{145}{145 - n}$$

in which n denotes the degree of Baumé, and a the specific gravity. The rules may therefore be stated as follows :

1. *To find the Degree of Baumé* divide 145 by the specific gravity and deduct the quotient from 145.

2. *To find the Specific Gravity*, divide 145 by the difference between 145 and the given degree of Baumé.

This standard has been selected merely as a matter of convenience, and not because it is based on well-established facts or determinations. It is much to be regretted that the old custom of quoting in degrees of Baumé is still being followed and apparently sanctioned for a long time to come.

No. 1,435.—**Nickel Vessels** (Sh.)

Ditmar has recently stated that nickel capsules or crucibles are quite resisting towards caustic alkalies, at least up to a solution containing 60% of alkali. As the metal is harder than silver, and therefore less liable to be bent or dented, and as it is a less efficient conductor of heat, capsules of nickel

are of considerable service in many operations. The only difficulty is encountered when ferric oxide stains remain on the metal. On trying to remove them with an acid, a minute amount of nickel is dissolved at the same time.

No. 1,436.—**Bismuth Hair-Dye** (M.)

Subnitrate of Bismuth...	5 parts.
Hydrosulphite of Sodium..	20 "
Chloral Hydrate.....	10 "
Glycerin.....	500 "

Dissolve each of the solid ingredients in a portion of the glycerin, using a gentle heat in the case of bismuth, if necessary; then mix the liquids and perfume them to taste.

No. 1,437.—**Secretary of Quebec Board of Pharmacy** (H. C. N.).

The Secretary of the Board of Pharmacy of the Province of Quebec is Mr. Wm. Ahern, Registrar of the Pharmaceutical Association of the same Province, 223 McGill street, Montreal, Can.

No. 1,438.—**Scudamore's Inhalation** (E. I.).

The formula is the following:

Iodine.....	gr. 6
Iodide of Potassium.....	" 6
Alcohol.....	f. ʒ 2
Water enough to make.	fl. ʒ 6

Tincture of Conium, as directed.

From ½ to 5 fluid drachms of the above solution, with ½ fluid drachm of tincture of conium, are to be added to warm water (120° F.) in a glass inhaler, and used twice a day. Two-thirds of the amount directed are first put into the inhaler and the rest added when half of the time for inhaling has elapsed.

No. 1,439.—**Dobell's Solution** (G. R.)

The formula which has been used for years in the public hospitals of New York is as follows:

Carbolic acid.....	ʒ 1½
Borate of Sodium.....	ʒ 2
Bicarbonate of Sodium..	ʒ 2
Glycerin.....	f. ʒ 3
Water, enough to make	f. ʒ 32

Recently, Mr. E. V. Zoeller, of Tarborough, N. C., stated, in a communication to the *Weekly Drug News*, that the correct formula appeared to be that published in Mackenzie's Manual of Diseases of the Throat and Nose, vol. II., 380 (Wm. Wood & Co., N. Y., 1884), namely:

Borax.....	ʒ 1
Glyceride of Carbolic acid	ʒ 2
Sodium Bicarbonate.....	ʒ 1
Water.....	O ½

The glycerite of carbolic acid meant is that of the British Pharmacopœia, which is made by dissolving 1 av. ounce of carbolic acid in 4 imper. fl. oz. of glycerin.

Dr. Hughes, of the Kings County Hospital, in the same journal, states that the original formula, as given by Dr. Horace Dobell, of London, was this:

Carbolic acid.....	♏ 30
Bicarbonate of Sodium..	ʒ 1
Borax.....	ʒ 1
Glycerin.....	ʒ 1
Water, enough to make..	O 1

Parrish's Treatise on Pharmacy (5th ed.) has another formula in which the glycerin is omitted.

No. 1,440.—**Formulæ of Perfumery** (G. A. S. Jr.).

We cannot be expected to try ourselves every formula that comes under our notice, or is published by us. But we take care to quote none that is not vouched for by some respectable authority. There is a very great diversity among various authorities and references, regarding even the most popular and supposed uniform perfumes. Of most proprietary articles, the true composition is unknown, and it is only possible in rare cases to approach the original faintly. Analysis can do nothing in this case, as it is practically impossible to separate and identify each constituent. Only an expert in perfumery, one who is accustomed to compound and handle the simple and compound essences used as bases or ingredients in complex perfumery, is likely to succeed by long experimentation and after the consumption of much valuable material, in making imitations of other manufacturers' products. As a rule, however, this is not an honest business, and is to be condemned. From what we know of others, however, it is usually this very search after an imitation of other makers' goods, that puts the experimenter upon a track of his own, enabling him to produce compounds differing from those of others, but equally salable and commendable.

Having made this preface, we give you a few formulæ selected from good authorities for the preparations you desire:

1. *Eau des Bayadères* (Naquet).

Oil of Bergamot...	1920 grains
" " Lemon.....	920 "
" " Orange, Portugal.....	920 "
Oil of Neroli, Bigarade.....	460 "
Oil of Petit grain.	460 "
" " Rosemary, finest.....	230 "
Oil of Rose.....	20 drops
Balsam of Tolu....	460 grains
Cochineal.....	230 "
Deodorized Alcohol, 86%.....	3 gallons

Macerate for ten days and filter. A few drops, or a sufficient quantity to tinge and scent, are added to the water used for washing the face and hands.

2. *Eau de Cologne* (reputed imitation of J. M. Farina's, of Cologne).

Oil of Rosemary, finest.....	1 oz. av.
Oil of Petit grain...	1 "
" Lavender...	1 "
" Cedrat.....	1 "
" Portugal....	2 "
" Lemon.....	1 "
" Bergamot...	200 grains.
" Neroli Bigarade.....	370 "
Orange Flower Water.....	20 fl. oz.
Deodorized Alcohol, 86 %.....	2¼ gall.

Mix the oils and let them stand for about an hour, shaking occasionally. Then add the orange flower water and shake again for several minutes. After standing for 24 hours, filter.

[Although this has been reported as Farina's Cologne many years ago, it is more than doubtful that the true formula has ever become known.]

3. *Toilet Vinegar.*

Spirit of Melisse..	3 pints.
" " Lavender.	2 "
" " Rosemary	2 "
Oil of Bergamot..	1500 grains.
" Orange, Bigarade	900 "
Oil of Lemon.....	600 "
" Orange, Portugal.....	500 "
Oil of Neroli.....	300 "
" Peppermint	230 "
" Thyme.....	230 "
" Cloves.....	80 "
" Cinnamon..	40 "
" Verbena ...	230 "
Alcohol, 32 %.....	20 pints.

Mix and distil on a water bath, so as to obtain 25 pints. In 8 pints of this, macerate 3 lbs. of orris root and 7 oz. of balsam of Tolu for one month. Then filter. Add the filtrate to the remainder of the distillate, and add 3 pints of acetic acid.

No. 1,441.—**The Benzin Test for Balsam of Peru** (U.).

The statement in the U. S. Pharm. among the tests of balsam of Peru, that the balsam "should not diminish in volume, when agitated with an equal volume of benzin, or water (abs. of fixed oils and alcohol)" is not correct. How the error crept in cannot now be ascertained. That benzin dissolves out, from the balsam, a considerable portion, was well known long ago. In fact benzin, as well as certain other solvents, dissolve out a volatile aromatic oil of very high boiling point, generally known as cinnameïn, and in reality a cinnamate of benzyl, which amounts, in different lots of balsam, to between 45 and 60 per cent. Hence the statement in the U. S. Ph. must be corrected by striking out the words "benzin or," and "fixed oils and."

Another statement made in the same place is, that "a mixture of 1 part of the balsam with 3 parts of disulphide of carbon separates from the balsam about 40 per cent of resin." This quantity has been shown by McEwan to be much too high. A good balsam should, under those circumstances, leave not more than 16% of insoluble residue. Any larger amount points to the presence of adulterants, particularly benzoin, which may thus be detected.

No. 1,442.—**Reaction between Ferrous Sulphate and Nitric Acid** (G.).

We have received the following query: "Will you kindly publish in your next issue the equation for the reaction between Ferri Sulphas (U. S. Ph.) and Nitric Acid (U. S. Ph.), supposing equal parts, by weight, were used at the ordinary temperature."

Without attempting to test the reaction practically, in order to arrive at a correct quantitative knowledge of the resulting products, we feel justified in giving the following explanation, as the result of previous experience, and on the basis of well-established facts.

Nitric acid, when added to a ferrous salt, acts primarily as an oxidizing agent, splitting up into water, nitric oxide, and nascent oxygen:

$2HNO_3$	=	H_2O	+	NO	+	O_3
nitric acid.		water.		nitric oxide.		oxygen.

Under the influence of the oxygen, which does not always become evident in the end-product, the metal is raised to a higher atomicity, that is the dyad iron″ (ferrosum) is raised to the tetrad or triad iron‴ (ferricum). If the ferrous salt contained any other acid, or acidulous radical, except nitric acid, the action of the nitric acid is to produce a *basic* ferric salt, as there is not enough of the other acid present to fully saturate the ferric base to a neutral salt. If a neutral or saturated salt is wanted, an additional amount of the same acid as is already in the ferrous salt must be added. Compare the U. S. Ph. processes for Liquor Ferri Chloridi, Liquor Ferri Tersulphatis, etc. If the conditions named by our querist are given, then the reaction would, in the first place, proceed as follows:

$6(FeSO_4.7H_2O)$	+	$2(HNO_3.1\frac{1}{2}H_2O)$*	=			
Ferri Sulphas, U. S.		Nitric Acid, U. S.				
1668.		180.				
$2Fe_2(SO_4)_3.Fe_2(HO_6)$	+	$2NO$	+	$43H_2O$		
basic ferric sulphate.		nitric oxide.		water.		
1014.		60.		774.		

that is, assuming first that only equivalent proportions were to react upon each other, we would obtain a basic sulphate or oxy-

* Approximately, since the officinal acid contains 69.4 per cent of HNO_3 and 30.6 per cent of water.

sulphate of iron. One of the conditions given, however, is that equal *weights* of both the salt and the base be present. It will be seen on glancing at the formula of the basic salt that the excess of base $Fe_2(OH)_6$ requires 6 molecules of nitric acid HNO_3 to convert it into a neutral salt, in which case the basic sulphate would be rendered into a neutral sulphate and a neutral nitrate. These six additional molecules of nitric acid would weigh—in molecular weights—540 parts, making the total nitric acid 720 parts, while the iron salt originally amounted to 1668 parts. When the reaction has proceeded to this point, all the nitric acid over and above 720 parts will merely help to form an acid salt, or it will merely dilute the liquid containing the neutral sulphate and nitrate.

To sum up, equal parts by weight, say 100 parts each of crystallized ferrous sulphate and officinal nitric acid would make as nearly as possible:

		Parts.	
Ferric Sulphate	$Fe_2(SO_4)_3$	48	
Ferric Nitrate	$Fe_2(NO_3)_6$	28	(nearly)
Nitric Oxide	NO	4	(nearly)
Water	H_2O	62½	
Excess of Nitric Acid		57	(nearly)
		200	
Nitric Acid consumed in reaction		43	(nearly).

No. 1,443.—**Venetian Soap** (W. S.).

This is the same as White Castile Soap. Other names are: Sapo Hispanicus, Sapo Venetus albus, Sapo Alicanticus, Marseilles Soap, etc. We need not tell you that it is a soda soap originally made with olive oil exclusively, but now also made with other bland vegetable oils, and thoroughly saponified so that it has no caustic or irritant qualities. The remainder of your query will not require any further answer.

No. 1,444.—**Ginger** (G. W. F.).

There are large quantities of both African and of Jamaica Ginger imported into this country. In 1880, 3,933,860 lbs. of ginger of all kinds were imported into the U. S., and in 1882, 1,463, 139 lbs. We have no means of ascertaining how much of each variety was landed. Among the above was also considerable East Indian Ginger, but how much we cannot say. The latter can always be had in the market. You say that you find African Ginger better in flavor and more uniform than Jamaica Ginger. We agree with you in so far that we regard African as well as East Indian ginger as more pungent and aromatic, and therefore preferable for medicinal purposes. Bleached and decorticated or scraped ginger, however, such as Jamaica ginger, wich has a less harsh taste. is always preferred for culinary and confectioner's uses. The U. S. Ph. recognizes only the uncoated or decorticated variety, that is, Jamaica ginger. We are of the opinion that the fluid extract and tincture should preferably be made from the unpeeled variety. For aromatic powder, however, we decidedly prefer Jamaica ginger.

No. 1,445.—**Sale of Alcohol** (N. F.).

This correspondent wants to know whether his Government license allows him to sell alcohol across the counter without a city license.

Without assuming any responsibility as to the legal correctness of our advice in this or any other case, where no authoritative decision has been rendered from the bench, we would say that in our opinion the Government license authorizes the holder, within the city of New York, to sell not only alcohol, but every other liquid containing alcohol acoss the counter, provided the same is not drunk or used as a beverage on the premises. Alcohol and alcoholic liquids are of three kinds:

1. Those which are chiefly used in the arts and for technical purposes. The principal liquid belonging to this class is *alcohol*.

2. Those which are chiefly used for medicinal purposes. Among these are officinal and unofficinal tinctures, fluid extracts, elixirs, medicated wines (that is wines containing some medicinal agent added to them), and others. But to this class also belong, and quite legitimately, the best grades of brandy, whiskey and other liquors, which are of such a quality that they may be used medicinally, and which the apothecary is very often called upon to supply for the use of the sick or convalescent. It is true that this right and privilege is sometimes abused, in so far that these liquors are sold to any one asking for them. But the exception should not abolish the rule, and the sacred right of the physician to obtain for his patient anything which he conscientiously believes to be to his benefit, should never be infringed upon. At all events, so long as the bottle or package containing the liquor is not opened or the contents consumed on the premises, the United States Government license is all the legal form needed.

3. Those which are used as beverages, being either distilled or fermented. Even regarding these, the city does not exact a license, unless the packages containing them are opened and their contents sold at retail for consumption on the premises. It is this feature which constitutes a tavern, saloon or "hotel," and for which alone the city license is necessary and prescribed by law.

The mere possession of a Government license can, under no circumstances, be twisted or construed into the assumption that the licensee carries on a tavern business. The law does not go by assumption or presumption, but only by facts and proof. The U. S. Government laws regarding the manufacture and sale of all alcoholic liquids, distilled or fermented, are very strict, and their infringement is heavily punished, with perfect justice, we think, because the heavy punishment is needed as a help to the comparatively small staff of Government officials watching the execution of the law, to compel obedience to it. The U. S. Government does not care what becomes of the liquor, after its own law has been complied with and the tax is paid. The state law does not concern itself with the manufacture or the sale, in unbroken packages, of the liquors, but restricts itself to their comsumption by retail. There is nothing to prevent any State from enacting laws, taxing both the manufacture and the wholesale traffic in liquors, in addition to the tax already exacted by the U. S. But, on the other hand, we do not believe that Congress has the constitutional power to enact laws controlling the final use of these liquors or taxing their retail consumption.

No. 1,446.—**Beef, Wine, and Iron** (X. Y. Z).

Probably the best formula for general use is that published in the New York and Brooklyn Formulary:

Extract of Beef	256 grains.
Citrate of Iron and Ammonium	64 "
Water	½ fl. oz.
Simple Elixir	2 fl. oz.
Stronger White Wine to make	16 fl. oz.

Dissolve the citrate of iron and ammonium in ½ fl. oz. of boiling water. Pour the hot solution upon the extract of beef contained in a warm mortar or other suitable vessel, and triturate until a smooth mixture results. Then gradually add, while stirring, the simple elixir, and transfer the mixture to a graduated vessel, using enough stronger white wine [or sherry wine—which is preferred by many] to rinse the mortar and to make the product measure 16 fluid ounces Allow the mixture to stand during a few hours, then filter.

No. 1,447.—**Wine of Iron and Quinine** (Z.).

We know of no standard formula for this preparation. Either a definite amount of sulphate of quinine might be dissolved in the officinal wine of iron, or perhaps the taste might be improved by replacing some of the wine in the latter by simple elixir. Or a sufficient amount of an iron salt may be added to the Elixir Quininæ Compositum of the N. Y. and B. Formulary. Or finally, the iron salt may be added to "wine of quinine," for which the British Pharm. gives a formula. In this case, we might suggest the following:

Sulphate of Quinine	20 grains.
Citric Acid	30 "
Phosphate of Iron, U. S. P. 1880	40 grains.
Orange Wine, enough to make	1 pint.

Dissolve the citric acid and then the sulphate of quinine in 15 fluid ounces. Dissolve the phosphate of iron in ½ fl. oz. of boiling water, and add it to the wine. After three days, having occasionally shaken the mixture, filter.

No. 1,448.—**Aromatic Castor Oil** (X. Y. Z).

Hager gives the following formula:

Castor oil	500 Gm.	ab. 18 fl. oz.
Oil of Mirbane	1 Gm.	15 drops.
Chloroform	15 drops.	15 drops.

No. 1,449.—**Algin** (P. F. N.).

This writer asks whether anything further has been published on the subject of "Algerium as a Mucilage," which has recently been published in our paper. We presume the writer means *algin*, on the uses of which we published an interesting article on p. 146 in our last volume (p. 146 of the August number). We have seen nothing further regarding the substance, in any paper that has come under our notice. Should the writer desire to inform himself whether the substance is obtainable in the market and at what rates, we suggest that he write to the author of the paper, Mr. Ed. C. C. Stanford, F.C.S., whose address may be easily obtained from the Secretary of the Society of Arts, London.

Formula asked for.—One of our correspondents wants to know the formula for "*Glycerated Wine, Iron, and Blood Compound*" [!].

Another one asks what the composition of "*Cuticura Salve*" is.

We are not aware of either; perhaps some of our correspondents may know.

Test for Traces of Iodine in Presence of Large Quantities of Bromine.

If much bromide is mixed or contaminated with a small quantity of iodide, and the halogens are separated by agitation with chlorine and disulphide of carbon, the brown color of the bromine completely masks the violet color of the iodine. If, however, one or two crystals of ferrous sulphate are now added, the brown color due to bromine will completely disappear, and the violet tint of the iodine will make its appearance. This reaction, which is undoubtedly due to the powerful oxidizing effect of bromine, is so delicate that the originator of it (Philip S. Brito, in *Chem. News*, 1884, 210) was able to detect traces of iodine in the supposed chemically pure bromide of potassium used as a reagent in the laboratory.

A MANUAL OF ORGANIC MATERIA MEDICA; being a Guide to Materia Medica of the Vegetable and Animal Kingdom, for the use of Students, Druggists, Pharmacists, and Physicians. By JOHN M. MAISCH, Phar.D., Prof. of Mat. Med. and Botany in the Philadelphia College of Pharmacy. *Second edition.* With 242 illust. 8vo. Philadelphia, 1885.

AFTER having been fifteen months out of print, a new edition of this well-known manual lies before us. Among the additions are noticed descriptions of the most important indigenous drugs of North America — even those which are not official —to provide a guide and standard for the herb-gatherer, herb-dealer, druggist, manufacturer, and others who have to handle them. The pharmacognostic portion has also received increased attention, and the illustrations have in many cases been replaced by better ones. The manual will no doubt be generally received as a standard authority on the subject it deals with, and become the general text-book where pharmacognosy or materia medica is taught.

What the Drug Business may come to in New York if the Excise Board has its way.

YEAR-BOOK OF PHARMACY. Comprising Abstracts of Papers Relating to Pharmacy, Materia Medica and Chemistry, contributed to British and Foreign Journals from July 1, 1883, to June 30th, 1884, with the transactions of the British Pharmaceutical Conference at the XXI. Annual Meeting held at Hastings, Aug., 1884, pp. 628, 8vo.

ANNUAL REPORT AND STATEMENTS OF THE CHIEF OF THE BUREAU OF STATISTICS on the Commerce and Navigation of the United States for the Fiscal Year ending June 30th, 1884. *Foreign Commerce.* Washington, 1884, pp. 1045, 8vo.

THIRD ANNUAL REPORT OF THE ILLINOIS BOARD OF PHARMACY, with Abstract of State Pharmacy Register, 1884, pp. 78, 8vo.

THIS volume contains, besides an introductory chapter, the Minutes of the Board and lists of Registered Pharmacists (3,058) and Assistant Pharmacists (762), and a copy of the Act regulating the practice of pharmacy in Illinois, adopted May 30th, 1881.

THE DIAGNOSIS AND TREATMENT OF CHRONIC NASAL CATARRH, etc. By GEORGE M. LEFFERTS, A.M., M.D., of New York, Professor, etc. St. Louis: Lambert & Co., pp. 49. 33 Illustrations.

THIS is a reprint of three clinical lectures delivered at the College of Physicians and Surgeons, New York, and reprinted from the *Medical News*, of Philadelphia, and the "American Clinical Lectures" of New York. It is well adapted as a manual for instruction in the methods of manipulating the instruments customarily used in the treatment of this affection.

RETAIL DRUGGIST'S DIARY AND WANT-BOOK. Detroit: F. Stearns,

THIS second edition of Mr. Stearns' admirable work contains sixteen pages of important tables and information, fifty-two pages of diary, with space for each day of the year for entering memoranda, twelve pages of want-book, for entering wants and purchases, and a priced pharmaceutical catalogue of one hundred pages, comprising over 14,000 items, and 874 illustrations, and ninety-eight pages of priced catalogue, with 194 illustrations of "non-secret" medicines, toilet and other articles.

ONE HUNDRED YEARS OF PUBLISHING, 1785–1885. Philadelphia: Lea Brothers & Co. Pp. 20.

THIS is a sumptuously-published history of the well-known Philadelphia firm, which originated with Mathew Carey, born in Dublin, in 1759, who fled to this country in 1784 to avoid political persecution, and who commenced business with four hundred dollars, generously loaned him by Lafayette, who was then visiting at Mount Vernon. The narration is exceedingly interesting in many particulars, and is one of which the descendants of Mathew Carey have just reason to be proud.

TRANSACTIONS OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA. Third Series, Vol. VII., Philadelphia, 1884. Pp. 326, 8vo.

BESIDES the customary lists of officers, fellows, etc., the volume contains sixteen papers on a great variety of topics, and among them the paper by Dr. Henry Leffmann on "Criticisms from a Chemical Point of View on Some Favorite Prescriptions," an abstract of which we have already published. "A study of the Nutritive Value of Branny Foods," by Drs. N. A. Randolph and A. E. Roussel, and "The Composition and Methods of Analysis of Human Milk," by Prof. Albert R. Leeds, would also prove of interest to many of our readers.

THE CALENDAR OF THE PHARMACEUTICAL SOCIETY OF GREAT BRITAIN: 1885. London, 1885. Pp. 519, 8vo.

THIS volume contains not only a catalogue of the membership of the society, but a large amount of information relative to the intricate legislation and other enactments with which our confrères apparently delight to surround themselves. There is also an extended report of the Benevolent Fund, and very complete information respecting the Schools of Pharmacy and the modes of instruction, examinations, prizes, etc., etc.

THIRD ANNUAL REPORT OF THE ILLINOIS BOARD OF PHARMACY. With abstract of State Pharmacy Register, 1884, pp. 78, 8vo.

BESIDES a summary of the business of the Board the report contains its minutes, in detail, list of cases prosecuted during the year ending June 30th, 1884, a list of the registered pharmacists (3058) and assistant pharmacists (762) in the State, and a copy of the pharmacy law approved May 30th, 1881.

The work is worthy of being a model for pharmacy-boards of other States.

PERSONALS.

William A. Gellatly died February 13th at his home in Llewellyn Park, N. J. He was a partner of the house of W. H. Schieffelin & Co., wholesale druggists, of No. 170 William street. He was born in Edinburgh fifty-four years ago, and his parents came to this country in 1835. When he was thirteen years of age, the firm of Schieffelin & Co. was in control of H. H. Schieffelin, with whom Mr. Gellatly obtained employment as an errand boy. He attended the College of Pharmacy for two years.

In 1860 he became a partner in the house, and when it reorganized in 1865 under W. H. Schieffelin, the great-grandson of its founder, Mr. Gellatly took the second place in the partnership. At the annual meeting of the National Wholesale Druggists' Association, held in this city two years ago, he succeeded Horace A. Benton, of Cleveland, as President, the first Eastern man to whom this honor was given.

Mr. Gellatly was a prominent member of the Chamber of Commerce and the American Pharmaceutical Association, and a Director of the Board of Trade and Transportation. He formerly lived in Brooklyn, but moved ten years ago to Llewellyn Park. His death was caused by pneumonia.

Dr. Christopher Columbus Graham, of Louisville, Ky., who died in that city on the 3d of February, was one hundred years old in Oct., 1884.

George Matthews, the senior member of the well-known firm of manufacturers of carbonated beverages and apparatus, died in this city, of pneumonia, on Sunday, Feb. 15th. His son was already sick of the same disease when he was attacked, and on the day preceding Mr. Matthews' death his wife was also attacked, and she survived him but a day.

Mr. Matthews was fifty-one years old, and succeeded his father, John Matthews, in his business, which developed gradually from an ordinary machine-shop into the particular line which has made his name known all over the country. The firm is fifty-two years old. Shortly before his death Mr. Matthews admitted his sons George and John into partnership, and the business will be carried on by them.

Apothecaries in the Army and Navy.—The House of Representatives Bill No. 8017 provides: I., That apothecaries of both army and navy shall receive a commission, those of the army to have the relative rank of a second lieutenant of infantry; those of the navy to have the relative rank of an ensign. II., That they shall not be in the line of promotion. III., That they shall receive the pay and emoluments of said grades in their respective branches of the service. IV., That they shall not be entitled to any of the benefits that may be conferred by this act until they have passed a satisfactory examination in elementary chemistry, materia medica, pharmacy and botany. V., That each and every apothecary who shall be serving in such capacity at the time of the passage of this act shall be granted, and if found proficient in the above-mentioned branches, shall receive a commission in that branch of the service to which he may be attached.